A NARRATIVE PERSPECTIVE ON PEER-TO-PEER SUPPORT WEBSITES FOR YOUNG PEOPLE

EFFECTS OF **WRITING** AND **READING** PERSONAL NARRATIVES

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Summary

Peer-to-peer support websites, which young people can use to interact in an anonymous manner with peers about distressing events, have predominantly been studied from the perspective of the exchange of social support responses between users. From a narrative perspective, this dissertation proposes that writing and reading personal narratives on peer-to-peer support websites may affect young people's emotional well-being and coping self-efficacy in relation to a stressful event regardless of the social support that users give or receive. We started from expressive writing theory and narrative persuasion theory to study how writing one's own personal narrative and reading personal narratives of others on peer-to-peer support websites may help young people to feel better about and feel more confident in coping with a distressing event.

This dissertation consists of 4 empirical chapters. Chapter 1 describes a cross-sectional online survey with Dutch-speaking adolescent users of peer-to-peer support websites. This first chapter explores how writing, reading and responding to personal narratives and users' social support motives (i.e., information-seeking and emotional support-seeking) are related to adolescents' perceptions about the usefulness of these websites to their coping self-efficacy. Starting from expressive writing theory, chapter 2 investigates the effects of different writing instructions in an online context. More specifically, two experimental study designs were used to investigate how expressive writing instructions focused on changing primary and secondary appraisals of a stressful event affect adolescents' and young adults' emotional reactions and coping self-efficacy about a distressing event. In chapter 3 we started from narrative persuasion theories to test how reading others' personal narratives on peer-to-peer support websites may affect readers' emotions and coping self-efficacy in relation to similar distressing events. More specifically, an experimental study design was used to compare the effects of a personal narrative in which the narrator shows high or low confidence in coping with a distressing event on readers' emotions and coping self-efficacy in relation to the same distressing event. Finally, chapter 4 looks into the applicability of an interactive interface design to support adolescents' writing within the context of a fictitious peer-to-peer support website. Once again, an experimental study design was used for this study. In this chapter, another theoretical framework, namely The

Theory of Interactive Media Effects (TIME) by Sundar et al. (2015), was used to examine how adolescents experience the use of writing instructions and how this relates to their attitude toward the website and intention to use a similar website in the future. Therefore, in comparison to chapter 2, this chapter is mainly focused on young people's experiences of writing instructions rather than the effects of writing instructions. A fictitious peer-to-peer support website was developed for this study.

From a narrative perspective, we conclude that the way young people write about their personal experiences and the content of personal narratives they read of others on peer-to-peer support can affect young people's emotional coping self-efficacy and well-being, independent of the social support responses that are exchanged between users. The results of this dissertation, therefore, lead to theoretical and practical conclusions that may reinforce the positive effects and overcome the possible negative effects of writing and reading online personal narratives on peer-to-peer support websites. More detailed information on the application of this narrative perspective can be found in the empirical chapters. In the general discussion and conclusion of this dissertation we elaborate further upon the application of this narrative perspective and avenues for further research.

Samenvatting

Peer-to-peer supportwebsites, die jongeren kunnen gebruiken om op een anonieme manier te communiceren met leeftijdsgenoten in tijden van stressvolle gebeurtenissen, zijn voornamelijk bestudeerd vanuit het perspectief van de uitwisseling van sociale steunreacties tussen gebruikers. Vanuit een narratief perspectief wordt in dit proefschrift voorgesteld dat het schrijven en lezen van persoonlijke verhalen op peer-to-peer supportwebsites van invloed kan zijn op het emotionele welzijn met betrekking tot een specifieke stressvolle gebeurtenis en hun zelfvertrouwen in het omgaan met die stressvolle gebeurtenis, ongeacht de sociale steun die gebruikers geven of ontvangen. We zijn uitgegaan van theorieën zoals expressive writing theory en narrative persuasion theories om te bestuderen hoe het schrijven van een eigen persoonlijk verhaal en het lezen van persoonlijke verhalen van anderen op peer-to-peer supportwebsites jongeren kan helpen zich beter te voelen over en meer zelfvertrouwen te krijgen in het omgaan met een stressvolle gebeurtenis.

Dit proefschrift bestaat uit 4 empirische hoofdstukken. Hoofdstuk 1 beschrijft een cross-sectioneel online onderzoek onder Nederlandstalige adolescente gebruikers van peer-to-peer supportwebsites. Dit eerste hoofdstuk onderzoekt hoe het schrijven, lezen en reageren op persoonlijke verhalen en de sociale steunmotieven van gebruikers (d.w.z. informatie zoeken en emotionele steun zoeken) samenhangen met de percepties van adolescenten over het nut van deze websites voor hun algemeen vertrouwen in het omgaan met moeilijke gebeurtenissen. Uitgaande van expressive writing theory onderzoekt hoofdstuk 2 de effecten van verschillende schrijfinstructies in een online context bij adolescenten en jongvolwassenen. Meer specifiek werden twee experimentele studies opgezet om te onderzoeken hoe schrijfinstructies gericht op het veranderen van primaire en secundaire overtuigingen van een stressvolle gebeurtenis van invloed zijn op het emotionele welzijn met betrekking tot de specifieke stressvolle gebeurtenis en het zelfvertrouwen in het omgaan met die stressvolle gebeurtenis. Hiervoor vroegen we participanten om hun ervaringen te beschrijven met betrekking tot de coronacrisis met behulp van één van deze schrijfinstructies. In hoofdstuk 3 zijn we uitgegaan van narrative persuasion theories om te testen hoe het lezen van persoonlijke verhalen van anderen in een online context van invloed kan zijn op

de emoties met betrekking tot een gelijkaardige stressvolle gebeurtenis en het zelfvertrouwen in het omgaan met die gebeurtenis van de lezer. Meer specifiek werd een experimentele onderzoeksopzet gebruikt om een persoonlijk verhaal waarin de verteller veel vertrouwen toont in het omgaan met de moeilijkheden als gevolg van de coronacrisis te vergelijken met een verhaal waarin de verteller weinig vertrouwen toont in het omgaan met diezelfde moeilijkheden. Tot slot wordt in hoofdstuk 4 gekeken naar de toepasbaarheid van een gestructureerde interface in een fictieve peer-to-peer supportwebsite om adolescenten te ondersteunen in het schrijven van een persoonlijk verhaal. Voor deze studie gebruikten we opnieuw een experimenteel onderzoeksopzet en de Theory of Interactive Media Effects (TIME) van Sundar et al. (2015) om te onderzoeken hoe adolescenten het gebruik van gestructureerde schrijfinstructies ervaren en hoe dit samenhangt met hun houding ten opzichte van de website en hun intentie om een soortgelijke website te gebruiken in de toekomst. Voor dit onderzoek werd een fictieve peer-to-peer supportwebsite ontwikkeld.

Vanuit een narratief perspectief op peer-to-peer supportwebsites concluderen we dat de manier waarop jongeren schrijven over hun persoonlijke ervaringen en de inhoud van persoonlijke verhalen die ze lezen van anderen op peer-to-peer supportwebsites hun emotionele welzijn met betrekking tot een specifieke stressvolle gebeurtenis en hun zelfvertrouwen in het omgaan met die stressvolle gebeurtenis kan beïnvloeden, onafhankelijk van de sociale steunreacties die worden uitgewisseld tussen gebruikers. De resultaten van dit proefschrift leiden daarom tot theoretische en praktische conclusies die helpen om de positieve effecten van het schrijven en lezen van persoonlijke verhalen op peer-to-peer supportwebsites te versterken en de mogelijke negatieve effecten te beperken. Meer gedetailleerde informatie over de toepassing van dit narratieve perspectief is te vinden in de empirische hoofdstukken. In de algemene discussie en conclusie van dit proefschrift gaan we verder in op de toepassing van dit narratieve perspectief en de mogelijkheden voor verder onderzoek.

INTRODUCTION

About this dissertation

Starting from a narrative perspective, this Ph.D. project studies the underlying mechanisms by which writing and reading personal narratives on peer-to-peer support websites may help young people (14 to 25 years old) to feel better about a distressing event and more confident in coping with the distressing event (i.e., increase their coping self-efficacy). This Ph.D. project further proposes and examines writing instructions and interface design adaptations to reinforce the positive effects and overcome the negative effects of the use of personal narratives on a peer-to-peer support website.

There are several reasons why this research is pivotal. First of all, recent research evidences that approximately 1 out of 5 adolescents has psychological difficulties (Kirtley et al., 2019; WHO, 2018). The improvement of young people's confidence in coping with stressful events may be crucial to overcoming mental health difficulties (Evans et al., 2015; Skinner & Zimmer-Gembeck, 2016; Conover & Daiute, 2017). We propose that peer-to-peer support websites can be an important resource for this matter. Secondly, several studies found that the use of peer-to-peer support websites has positive effects on adults' self-efficacy when coping with distressing events and well-being (e.g., Rains, Peterson, & Wright, 2015; Rains & Young, 2009; Yang, 2018). However, their effects on young people (14 to 25 years old) are not yet fully understood (Ali et al., 2015; Yang, 2018). Recent research on online social support and related fields, such as online self-disclosure and social sharing of emotions, has warned for the possible negative effect of a negativity bias on these platforms, leaving users with more anxiety and stress (e.g., Rains & Wright, 2016). Finally, peer-to-peer support websites have predominantly been studied from the perspective of social support, meaning that the positive effects are expected to be a result of the exchange of social support between users. In this dissertation, we suggest studying peer-to-peer support websites from a narrative perspective, therefore shedding new light on the uses and effects of these websites.

From a narrative perspective, we expect that the mere act of writing, reading, and responding to personal narratives may affect young people's emotional well-being and coping self-efficacy about a stressful event regardless of the social support that users give or receive. For this purpose, more research is needed on the precise

processes by which these personal narratives have an effect on young people and the effects of the framing and content of those narratives on young writers and readers. To our knowledge, peer-to-peer support websites have not yet been studied from this perspective.

In the introduction, we start with the importance of coping self-efficacy to young people's mental health. Afterward, we discuss the state-of-the-art of research on peer-to-peer support websites. Finally, we present the narrative perspective from which this Ph.D. project will start.

Research context during the COVID-19 pandemic

This Ph.D. started in October 2018.After completion of the first study outlined in chapter 1, I prepared an FWO proposal about my research project that would be conducted with adolescents between the ages of 14 and 18 years old. Writing this proposal had given me the opportunity to think about my project as a whole and the research I meant to conduct.

When the COVID-19 pandemic struck at the beginning of 2020, I was forced to rethink the research project. Although the COVID-19 pandemic required me to change the project outline, the quality of the project has not been compromised by it. As a blessing in disguise, the unfortunate conditions of the past years have provided the most appropriate context to have young people write or read personal narratives about distressing events and study the research questions determined from the start of the project onwards.

Moreover, the subject of this dissertation became even more relevant and proved the need for online social support resources for young people. During the COVID-19 pandemic, especially young adults were emotionally affected by the government's measures to stop the spreading of the virus (Magson, Freeman, Rapee, Richardson, Oar, & Fardouly, 2021; Shanahan, Steinhoff, Bechtiger, Murray, & Nivette, 2020). Mental health and coping strategies of young people, therefore, became a frequently discussed topic in news outlets and research. Young people experienced a lack of social contact and support from their friends and peers. As a reflection of this problem, the most popular peer-to-peer support website in Flanders, 'Awel.be',

received 19% more calls for help in 2021 compared to 2020 (Pano, 2022). Research was able to show that adaptive coping strategies, such as (online) social support seeking, protected young adults against negative psychosocial outcomes of the COVID-19 pandemic (Minahan et al., 2021).

Although I regret not having the chance to conduct the studies as outlined in the FWO proposal, I believe we overall managed to make the best out of these unfortunate events and deliver a relevant dissertation that still answers the original research questions of this Ph.D. project.

Young people's mental health, coping and online social support-seeking

Young people's mental health

Adolescence and young adulthood are turbulent life phases in which young people are exposed to many different challenging first-time experiences and ever-demanding expectations (Berk, 2014). The World Health Organization (2021) states that 14% of 10 to 19-year-old adolescents experience mental health difficulties. Research on Flemish adolescents shows the same pattern: 17% of adolescents declare to have moderate to severe symptoms of depression and anxiety (Kirtley et al., 2019). These difficulties seem to rise with age, going from 11% of 13-year-olds having psychological difficulties to 22% of 15-year-olds and even 27% of 17-year-olds (Kirtley et al.,2019). Researchers expect that most mental health difficulties in young adulthood (18- to 25-year-olds) have their onset in adolescence (WHO, 2018) and these difficulties may exacerbate when the warning signs are not paid attention to (Kirtley et al., 2019).

However, the WHO states that mental health is more than the absence of mental health difficulties and disorders. According to the WHO (2022), "Mental health is a state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community". The WHO further states that mental health "exists on a complex continuum, which is experienced differently from one person to the next, with varying degrees of difficulty and distress and potentially very different social and clinical outcomes."

(2022). This definition of mental health shows that mental health is, apart from any absence or presence of symptoms or medical diagnosis, first and foremost a personal feeling of mastery and control over one's life.

The importance of coping

It is understood that the development of good coping strategies during adolescence and young adulthood is crucial for maintaining good mental health throughout the lifespan (Evans et al., 2015; Skinner et al., 2016; Conover & Daiute, 2017). Lazarus and Folkman (1984) define coping as "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (p. 141). This definition looks at coping from a transactional perspective, in which coping is viewed as an adaptive process depending upon a person's appraisals of a stressful event and their own personal and social resources (Skinner et al., 2016).

Many scholars have categorized coping strategies according to their main function or approach. A well-known categorization distinguishes problem-focused and emotion-focused coping strategies (Skinner et al., 2016). These coping strategies are different from each other in terms of their function, which is either to resolve the problem (or the stressor) or calm down the emotions and thoughts accompanying the problem (or the stressor). For example, planning (i.e., coming up with a strategy to address the stressor) could be considered a strategy that is focused on the stressor, whereas emotional support-seeking (i.e., looking for emotional comfort with others) is more focused on finding ways to feel better about the situation (Carver, 1997). It is generally understood that emotion-focused coping strategies are advised when the distressing event is out of one's control (Lent, 2004). Another well-known categorization distinguishes approach and avoidance coping strategies (Skinner et al., 2016). These differ from each other in terms of their approach, either directed at facing and dealing with the stressor or strategies that withdraw people from the problem or stressor at hand. For example, finding instrumental and informational support with others (i.e., looking for advice or help from others) could be considered an approach strategy, whereas self-distraction (i.e., taking your mind off the stressor by doing something else) could be considered an avoidance strategy. In the literature on coping, the categorization of approach versus avoidance strategies has become a synonym for "adaptive" or "maladaptive" coping strategies (Skinner et al., 2016).

However, these higher-order categorizations are not perfect and do not do justice to the full spectrum of coping behaviors and their functions. For example, no coping strategy either fully functions to address a problem or the thoughts and emotions resulting from the problem (Skinner et al., 2016). Planning to address a problem may as well cause people to feel better about the problem at hand, while finding emotional support from others, may give people the strength to come up with ways to actively address the problem.

In this Ph.D. project, we start from a transactional perspective on coping. This perspective assumes that most coping strategies could be effective depending on the specific stressor and one's available resources to deal with that stressor (Skinner et al., 2016). Rather than focusing on good versus bad coping strategies, we believe that it is more important for young people to develop a diverse set of coping behaviors that lends them the flexibility to adapt to the demands of the specific stressful situation at hand (e.g., Conover & Daiute, 2017; Skinner et al., 2016 the next paragraph, we explain social support as an overarching coping strategy in more detail.

Social support and coping self-efficacy

Social support has been defined as "the exchange of verbal as well as nonverbal messages in order to communicate emotional and informational messages that reduce the retriever's stress" (Pfeil, 2009; p. 124). Social support-seeking as a coping strategy is an often-used coping strategy among young people (Skinner & Zimmer-Gembeck, 2016). People either look for informational support, meaning advice and information on ways to cope with a distressing event, or emotional support, indicating the exchange of affective and cognitive empathy to enhance mood and find recognition (Rimé, 2009). Informational support may help to "find out more about a stressful situation or condition, including its course, causes, consequences, and meanings, as well as learning about strategies for intervention and remediation" (Skinner & Zimmer-Gembeck, 2016: 37). Emotional support, in turn, resembles "the urge or desire to come into contact with an attachment figure" (Skinner & Zimmer-Gembeck, 2016: 38). Especially peer relations are an important source of social support from adolescence onwards. For the very first time, adolescents start to value their peers' opinions and judgments more than those of their parents and therefore peers become an important source for support and decision-making (Albert et al. 2013).

Research has consistently shown the importance of general social support and social support-seeking as a coping strategy for people's overall well-being and perceived stress. The literature has two major explanations for this. First of all, the main effects model on social support assumes that people with a strong (offline or online) social support network perceive less stress and higher well-being regardless of the situations they are facing (Cohen & Wills, 1985). In other words, people who have someone to turn to in the face of stressful events will experience less stress and higher well-being in general. The buffering hypothesis on social support assumes that social support-seeking as a coping strategy, meaning turning to other people when confronted with stressful events (Skinner & Zimmer-Gembeck, 2016), can buffer against the negative effects of a stressful event (Cohen & Wills, 1985). Following these two explanations, a representative survey among Flemish adolescents showed that those who had people in their environment to turn to in difficult times did not only experience less stress but also experienced less psychological difficulties in general (Kirtley et al., 2019).

Social support-seeking is often regarded as an over-arching coping strategy because it cannot only reduce stress directly (i.e., according to the main effects model and the buffering hypothesis; Pfeil, 2009), but can also provide people with a lot of insights into new and different coping strategies that are used by others (Zeidner et al., 2016). The social support that people receive from others may ultimately increase people's self-efficacy in coping with stressful events by lowering "uncertainty about the situation, the self, the other, or the relationship, and functions to enhance a perception of personal control in one's life experience" (Albrecht & Adelman, 1987, p. 19). This perception of personal control resulting from others' social support relates to Bandura's concept of self-efficacy: "the belief in one's capabilities to organize and execute the course of action required to produce given attainment". Bandura states that personal efficacy has an important relationship with one's coping behavior by saying that "expectations of personal efficacy determine whether coping behavior will be initiated, how much effort will be expended, and how long it will be sustained in the face of obstacles" (1978, p.139). Chesney et al. (2006, p. 2) define coping self-efficacy most broadly as "perceived self-efficacy for coping with challenges or threats".

The importance of coping self-efficacy for young people's coping with stressful events and mental health is substantiated in recent research. A longitudinal study

on the relationship between self-efficacy, stress, and life satisfaction among adolescents found that a general sense of self-efficacy was positively correlated with life satisfaction and that self-efficacy beliefs buffered against the negative effects of perceived stress on general life satisfaction (Burger et al., 2017). When looking at specific stressors, studies showed the importance of coping self-efficacy for adolescents and young adults when dealing with various stressors, such as sleep problems (ten Brink et al., 2021) and the Covid-19 lockdown (Cattelino et al., 2021).

For this reason, coping self-efficacy will be an important outcome variable in the studies included in this dissertation. In the first chapter, coping self-efficacy is divided in three factors, namely coping self-efficacy using problem-focused coping strategies to solve a problem, overcoming unpleasant emotions and thoughts, and getting support from friends and family. Yet, starting from a transactional perspective on coping, as explained earlier in this introduction, it seemed to make more sense to study coping self-efficacy as a single factor concept to examine young people's overall coping self-efficacy. For the chapter 2 and 3, coping self-efficacy was therefore examined as a single factor concept.

Peer-to-peer support website: a definition

Some young people might feel reluctant to directly ask for help from peers in an in-person context and may prefer (computer) mediated communication channels (Vermeulen et al., 2018; Mackenzie et al., 2020). Due to reduced social cues and controllability of (computer) mediated communication channels, young people may feel less constrained to share what they think and feel and therefore are more induced to disclose more about themselves and their experiences (Best et al., 2016; Lapidot-Lefler & Barak, 2015; Nesi et al., 2018; Schouten et al., 2007). This could be explained by what is referred to as 'the online disinhibition effect' (Hollenbaugh & Everett, 2013; Rains et al., 2017; Suler, 2004).

It is generally thought that online social support-seeking has similar positive effects as offline social support-seeking. For example, research on the social sharing of emotions suggests that sharing distressing experiences in an online and offline context closely resemble each other and that therefore their effects on well-being are quite similar (Rodríguez Hidalgo et al., 2015; Rain & Young, 2009; Rimé et al., 2019).

In this Ph.D. project, we focus on the uses and effects of peer-to-peer support websites for young people. The specific affordances of a peer-to-peer support website (such as social norms to share the negative, anonymity, and controllability) make social support from peers more accessible, especially for those who feel reluctant or unable to seek support in an offline or in-person context (Schouten et al., 2007; Choi and Toma, 2014; Vermeulen et al., 2018; Prescott et al., 2019; Yang, Yao, Seering, 2019). Before we dive any further into the literature, a more specific definition of a peer-to-peer support website is needed. We propose certain core characteristics or affordances to define the peer-to-peer support websites we address in this dissertation.

Focus on public peer-to-peer communication

Peer-to-peer support websites offer one or more communication pathways for users to interact with professionals or peers and can differ in the affordances, features, and applications for users to interact with each other. For example, many have e-mail and chat functions to contact moderators, volunteers of the websites, and/or (mental health) professionals (Hanley et al., 2019). In this dissertation, we focus on public peer-to-peer communication which is offered by the specific affordance of a forum or message board on which users can interact with peers in a public manner. This means that the messages are sorted by theme and directed to all users and visitors of the website. Research shows that this function is much appreciated by both adolescent and young adult users (Lazard et al., 2021; Reen et al., 2019) and shows the relevance of focusing on this specific affordance.

Focus on finding support in times of stress

The peer-to-peer support websites that we address are created to find support from peers in times of stress. This means that the affordances get into contact with peers are not meant for mere social interaction, but rather to offer each other informational and emotional support in situations causing varying degrees of stress. Although users may get off topic about shared interests (Hanley et al., 2019), the conversations on these websites mainly evolve around these events. In that sense, we make a distinction between social support seeking on social support sites and general social networking sites (e.g., Facebook, Instagram).

Some research has focused on online support websites related to specific topics or target groups. For example, in the literature on health communication, they are often referred to as a (mental) health community (e.g Yang et al., 2017; Yang et al., 2019) and therefore studied within a clinical target group with a specific (mental) health condition (e.g., cancer, depression, e.g., Ali et al., 2015; Lazard et al., 2021). However, the peer-to-peer support websites we address here are not necessarily limited to a certain topic or target group. In this dissertation, we aim to address peer-to-peer support websites that offer a space to discuss a wide variety of topics that are important to all young people (e.g., education, friends & family, sexuality, health, etc.). Previous research on a blog-like social networking site showed that it was evenly often used for traumatic and highly emotional experiences as well as daily hassles experienced by members of the community (Rodríguez Hidalgo et al., 2015).

Profound social norm to share the negative

Because of its main goal to give people a space to share distressing experiences with peers and find social support, peer-to-peer support websites have a profound social norm to share the negative (Goldenberg & Ross, 2020). Because of the more favorable social norm to share the negative, the messages that are exchanged are generally more negative in nature (Goldenberg & Ross, 2020). Previous research on a blog-like social networking site, where users talked about daily hassles as well as highly emotional experiences, showed that negative emotion posts outnumbered bivalent and positive posts (Rodríguez Hidalgo et al., 2015). Moreover, it was shown that messages posted on a forum (or a public setting) contained more disclosure on self-related subjects and more negative content compared to a chat (or private setting, in which users could talk to each other in a one-on-one setting; Yang et al., 2017; Yang et al., 2019).

This unwritten social norm to share the negative is an important difference in comparison with other social networking sites (Goldenberg & Ross, 2020). This was also illustrated by research among Flemish adolescents (Vermeulen et al., 2018). Adolescent participants in this study declared to sometimes share negative emotions and experiences through social networking sites, but that this greatly depended on the medium they used. For example, they explained that in general it was more approved to share the negative in online private conversations instead

of in public posts. When it came to public contexts, it was simply not socially approved to share negative posts on e.g., Instagram, whereas this was more socially approved on e.g., Twitter or Tumbler. However, both in private and public settings on social networking sites, adolescents declared that it was more common to share the events that happened, rather than the specific emotions and thoughts one had about these events (Vermeulen et al., 2018). Multiple studies on social networking sites showed that people were less inclined to write a social support response when the initial post was too negative, showing that on social networking sites, (such as Facebook) negative personal narratives by others are not welcomed (High et al., 2014; Ziegele & Reinecke, 2017). This study suggests that due to this unwritten social norm, popular social networking sites may not be perceived as ideal to share negative experiences in a thorough and honest manner.

Anonymity and controllability

In comparison to other forms of social networking sites, peer-to-peer support websites are often anonymous. This means that the identity of the user is unknown or not identifiable by others (Clark-Gordon et al., 2019). It was shown by meta-analytic research that anonymity was positively correlated with online self-disclosure through different online contexts (Clark-Gordon et al., 2019). Besides anonymity, the asynchronous nature and availability at any time and place of peer-to-peer support websites offer users the control to think and reflect on the message that they want to convey without time pressure (Rains & Young, 2009). Qualitative research with young adult users of peer-to-peer support websites showed that the participants declared that the controllability of the medium was an important advantage over in-person support (Lazard et al., 2021). This anonymity and controllability over the message together with a profound social norm to share the negative gives users a sense of safety to describe their experiences in pure honesty and detail that they would not do in an offline context or any other online context (Prescott et al., 2019; Rains et al., 2017; rains & young, 2009).

Personal narratives

Apart from some exceptions, most peer-to-peer support websites allow users to share only text-based information. This text-based nature results in narrative-like messages that we will refer to as 'personal narratives'. In a personal narrative on a peer-to-peer support website, someone often explains what they went through,

how they ended up in this situation, and what they did to deal with the situation. In our narrative perspective on peer-to-peer support websites we expect that the writing and reading of these personal narratives may affect young people's emotional well-being and coping self-efficacy, regardless of the social support messages that are being exchanged between users.

These personal narratives, written and read on peer-to-peer support websites, are the main focus of this dissertation. In the following paragraphs we further explain how we define and operationalize personal narratives in the empirical chapters by applying expressive writing theory and narrative persuasion theory.

Peer-to-peer support websites for young people in Flanders

Flanders' most well-known and often used peer-to-peer support website 'Awel.be' for young people best corresponds to the above description. It was set up in 2009. Awel is aimed at children, adolescents, and young adults from 6-25 years of age (Awel, s.d.-b). The website allows young people to call, e-mail and chat with volunteers. The COVID-19 pandemic has highlighted the need for their services since they received 19% more calls for help in 2021 compared to 2020 (Pano, 2022).

On the message boards or fora, users can exchange their personal experiences by writing their personal narratives or reading and responding to those of others on a variety of topics. The communication on these message boards is anonymous, text-based, and asynchronous. Young people talk about a variety of topics on these message boards. Over the past few years, themes such as the relationship with parents, friendship and feelings of sadness, anxiety, and stress were among the most discussed topics (Awel 2021, 2022). Sexuality is generally more often discussed on message boards than through other functions, because of its sensitive nature (Awel, 2022). Mental health difficulties are a theme that is on the rise in recent years (Awel, 2021). Awel assumes that this is because it has become more accepted to talk about this topic.

In 2021, it was estimated that around 81% of the users of these message boards were girls, whereas only 18% were boys. Around 31 percent of their users were young adolescents between the ages of 13 to 15 years old. Young adults over the age of 18 would prefer to contact Awel over the telephone (Awel, 2021). The main reason for young people to use the message boards was to find recognition in their experiences and learn how peers tackled similar problems (Awel, 2021). Since 2017, the message boards have been moderated by young volunteers - mostly adolescents and young adults, also known as 'J-Awellers' - who are trained to answer users' personal narratives and questions (Awel, s.d.-b).

More websites in Flanders allow peer-to-peer communication to talk about specific distressing events or are focused on specific target groups. For example, the website 'Cybersquad.be' is designed to discuss situations related to online dangers, such as cyberbullying or cyber dating abuse. Another website, called 'Overkop.be', is designed to discuss topics on mental health. The website 'min19.be' is targeted to the LGBTQ+ community in Flanders.

Other websites present information on sensitive topics of interest to adolescents and young adults in a format that is appealing to young people. Examples of these websites are 'edtv.be' 'watwat.be'. Whereas the first has a forum of itself, the latter does not. However, this website lends users the opportunity to send in their personal narratives to the editorial board to get published on the website.

From a social support perspective to a narrative perspective

Peer-to-peer support websites are predominantly studied from the perspective of social support. Research that starts from a social support perspective generally assumes that social support needs are the main motives for users to make use of a peer-to-peer support website (e.g., Welbourne et al., 2013; Zhang, 2016) and that the positive effects of using peer-to-peer support websites are mainly due to the social support that is being exchanged between users (Welbourne et al., 2013). Previous research found that the level of perceived social support indeed mediated the positive outcomes of online social support use on well-being, both in adult and adolescent populations (Welbourne et al., 2013). Focus groups with young people on the use of peer-to-peer support websites have demonstrated that users perceive that these websites are indeed helpful to find emotional and informational support on distressing events and that the support they find in turn helps to regulate their moods (Prescott et al., 2019).

From this social support perspective, it is expected that active users, or those who interact more with other users by sharing personal narratives, receiving social support responses of others and/or responding to the personal narratives of others, have more opportunities to experience social support and would therefore benefit the most from the use of peer-to-peer support websites (Gopalsamy et al., 2017; Yang, 2018). Passive users, who less frequently use peer-to-peer support website, have a shorter duration of visits, and make almost no active contributions, would experience only minimal benefits because they do not get social support responses from other users to their personal experiences (Malloch & Zhang, 2019; Preece et al., 2004; van Mierlo, 2014; Sun, Rau, & Ma, 2014).

As a result of this perspective, the number of active users or social support message exchange is often considered a quality measure for the peer-to-peer support website (e.g., van Mierlo, 2014). Research found that peer-to-peer support websites with higher message exchange between users attract significantly more new users and encourage passive users to become active users (Gopalsamy et al., 2017). It was also shown that there is reciprocity in the exchange of social support messages, meaning that the number of social support messages a user sends and receives is more or less the same (Pan et al., 2017). However, the majority of visitors

of peer-to-peer support websites are passive users (Malloch & Zhang, 2019; Preece et al., 2004; van Mierlo, 2014; Sun et al., 2014). This so-called 'under-contribution problem' is often regarded as a fallacy of the peer-to-peer support website (e.g., Kim & Sundar, 2014, 2015).

Although this social support perspective has led to valuable research findings that should not be dismissed, we believe it may oversimplify the effects for active and passive users of peer-to-peer support websites and overlook effects due to other reasons than merely giving and receiving social support responses. Research by Rains and Young (2009) has already suggested that research on peer-to-peer support websites should try to step away from a focus on active use and exchange of social support. However, since then not a lot of studies have followed up on this recommendation.

First of all, merely writing personal narratives on peer-to-peer support websites could impact young people's emotions and coping self-efficacy regardless of the social support responses users receive afterward. Research on expressive writing, a concept we will explain in more detail in the following paragraphs, has been able to show the many benefits of writing about distressing experiences.

Secondly, a social support perspective does not lend enough credit to passive users, or readers, that make up a big part of the users of peer-to-peer support websites. Research found that these passive users do experience benefits of using these websites such as feelings of empowerment, improved self-esteem, adoption of effective coping strategies, and perceived social support (Malloch & Zhang, 2019; Mo & Coulson, 2010; Namkoong, McLaughlin, Yoo, Hull, Shah, Kim, Moon, Johnson, Hawkins, McTavish, & Gustafson, 2013; Van Uden-Kraan et al., 2008). The mechanisms by which these users experience positive effects have yet to be studied in more detail.

Lastly, a social support perspective does not give enough attention to the possible negative effects of writing and reading personal narratives on peer-to-peer support websites due to a so-called negativity bias (Hanley et al., 2019), which we will discuss in more detail in the following paragraphs. Online social support-seeking is associated with more negative short-term responses to stress and increased worry and loneliness in adolescents (Duvenage et al., 2020). Focus groups with

adolescents revealed that the negativity posted by others was regarded as a fallacy of online social support seeking by adolescents themselves (Duvenage et al., 2020). The same reduced social cues that cause young people to disclose more easily about distressing experiences, may also cause others to be more critical and give more negative feedback (Nesi et al., 2018). It is suggested by earlier research that moderators may play a big role in overcoming the problem of unwanted and uninformed advice (Hanley et al., 2019; Prescott et al., 2017; Prescott et al., 2018;) and that clearly stated community standards might help to reduce negative and harmful content (Lazard et al., 2021).

From a narrative perspective, we expect that the mere act of writing one's personal narrative and reading personal narratives of others on peer-to-peer support websites may affect young people's emotional well-being and coping self-efficacy about a stressful event regardless of the social support messages that users exchange with each other. Therefore, we posit that the goal of these websites should not be to merely increase active use but increase both active and passive users' positive experiences and learning processes, such as increased positive emotions and coping self-efficacy. For this purpose, more research is needed on the precise processes by which writing these personal narratives has an effect on young people and the effects of the framing and content of those narratives on young readers. To our knowledge, peer-to-peer support websites have not yet been studied from this perspective.

For the purpose of this dissertation, we formulate the following overarching research questions:

How does writing and reading personal narratives about distressing events on peer-to-peer support websites relate to young people's emotional reactions and coping self-efficacy in relation to these distressing events?

Can the interface of peer-to-peer support websites be designed to facilitate coping self-efficacy and positive emotions with distressing events and also lead to an overall positive user experience?

Can the interface of peer-to-peer support websites be designed to facilitate coping self-efficacy and positive emotions with distressing events and also lead to an overall positive user experience? In the following paragraphs, we explain the different mechanisms by which writing and reading personal narratives on a peer-to-peer support website may have both positive and negative effects on young people's coping self-efficacy and more general emotional well-being. We will introduce two theories to explain the effects of writing and reading personal narratives. First, employing expressive writing theory, we explain why the way young people reflect and write about their personal experiences matters. We will propose different ways how we can support young people in their writing process through writing instructions and adaptations in the interface of a peer-to-peer support website. Second, using narrative persuasion theories and the concept of digital emotional contagion, we will further examine how narrative content affects readers' emotional well-being and coping self-efficacy, and the writing of their personal narratives.

Writing personal narratives on a peer-to-peer support website

As explained in the previous paragraphs, social support-seeking on peer-to-peer support websites may lend young people the opportunity to receive emotional and informational support from others and feel better about distressing events. From a narrative perspective, we expect that the mere act of writing a personal narrative on a peer-to-peer support website may already have a positive effect on writers' emotional well-being and coping self-efficacy, regardless of the exchange of social support messages with other users. To explain why we primarily rely on expressive writing theory.

Expressive writing theory: What is it?

Research on expressive writing has been able to show the many benefits of writing about distressing experiences. Travagin et al. (2015) define expressive writing – also called written emotional disclosure - as an "individually focused intervention designed to improve emotional expression and processing during adaptation to stressful situations and, as a consequence, improve psychological and physical health" (p.43). One of the most cited meta-analyses on the effects of expressive writing found that it had positive outcomes on general well-being, such as enhanced

mood, lowered depressive symptoms and anxiety, and even physical health (Frattaroli, 2006). A very recent meta-analysis on expressive writing confirmed once again that writing on distressing events had a positive effect on depressive symptoms, anxiety, and perceived stress (Guo, 2022).

There have been studies examining for whom and under which circumstances expressive writing is most beneficial. In most cases, a standardized expressive writing instruction asks people to write about their deepest thoughts and emotions about distressing experiences. In general, it was found that writing about more recent and specific events, writing more often (3 times or more) for a short period (within 1 to 3 days) and for a longer time (more than 15 minutes) would enlarge the positive effects that were found (Frattaroli, 2006; Guo, 2022; Reinhold et al., 2017). Since expressive writing is often used for therapeutic purposes, most studies and meta-analyses on the topic are conducted within a sample of people with physical or mental health difficulties (e.g., depression, Reinhold et al., 2017; PTSD, Pavlacic et al., 2019). However, other meta-analyses found that positive effects on well-being were also found for people without (mental) health difficulties (Frattaroli, 2006; Guo, 2022). It was therefore concluded that an expressive writing intervention could also be helpful to anyone who is confronted with (temporary) low mood, anxiety, and stress as a result of a distressing event (Guo, 2022; Sabo Mordechay et al., 2019).

Research on expressive writing has also looked in more detail at what specific contents make writing about stressful events more effective. For example, early research on expressive writing theory found that the use of cognitive words (e.g., think, believe, realize) leads to the most positive effects (Smyth, 1998; Pennebaker and Seagal, 1999; Burton and King, 2004; Pennebaker, 1999; Lee et al., 2016). More recent research found that higher narrative coherence and structure were important too (Graci et al., 2018). Most notably, a balance between the positive and the negative seems to be essential. For example, writers who used relatively more positive-emotion words and relatively less negative-emotion words tended to benefit the most in terms of their well-being (e.g., Burton and King, 2004; Pennebaker, 1999; Pennebaker & Seagal, 1999; Smyth, 1998; Graci et al., 2018). Research on narrative meaning making adds to this that not only a balance between respectively positive-emotion words and negative-emotion words matters but the

overall positive or negative interpretation of personal experiences are important as well (Graci et al., 2018).

Several theories explain the underlying effects of expressive writing (Sloan & Marx, 2004, 25; Frattaroli, 2006). The first is called 'the emotional inhibition theory'. This theory assumes that when people repress negative emotions and experiences, this may result in psychological and physical health problems. Writing about one's emotions and experiences can help to let go of these negative feelings and thoughts, leading to positive health effects in the short and long term. A second theory, called 'the exposure theory', also referred to as 'emotional processing theory', states that writing may help to explore thoughts and feelings around a distressing event the writer is not fully aware of (yet). According to the 'cognitive adaptation' or 'the cognitive-processing theory', writing about experiences may help to restructure and reappraise one's thoughts and feelings, which may help to change one's beliefs in accordance with new insights followed by the writing exercise. Lastly, the 'self-regulation theory' adds that writing may help to give oneself feedback and think of a plan of action in relation to a stressful experience and thus help to reflect upon one's coping strategies (e.g., How did I cope before? How can I cope better?; Pennebaker & Seagal, 1999).

Research is not conclusive on what theory is most important. Most likely, positive effects may result from a combination of these mechanisms, and depending on the person and the situation that is being described one theory may be more applicable than the other. In this dissertation we start from the premises that writing a personal narrative on a distressing experience may have positive effects on emotional well-being and coping self-efficacy, either directly because of expressing emotions and thoughts (an emotional processing mechanism) or as a result of reappraising thoughts and emotions (a cognitive restructuring mechanism) and reflecting on one's coping strategies about the event in question (a self-regulation mechanism; Travagin et al., 2016). Writing about stressful events could therefore be considered a form of coping by itself (Binel-Nissim, 2013; Rains & Keating, 2015).

Is expressive writing always a good idea for young people?

Although there is an extensive amount of research on the benefits of expressive writing for adults, research on the benefits of expressive writing for adolescents

and young adults is scarce. Only one meta-analysis was able to examine the overall effects of expressive writing on adolescents and concluded that the effects are small but significant and comparable to the effects found with adults (i.e., 10- to 18-year-old participants; Travagin et al., 2015). To our knowledge, no meta-analytic research has been conducted on the effects of expressive writing in a young adult population (i.e., 18 to 25 years old).

According to researchers, it is important to notice that young people may experience more difficulties when reflecting and writing on their distressing experiences than adults. Due to emotional and cognitive developments during adolescence and young adulthood, the kind of meaning-making processes underlying the positive effects of expressive writing theory may still be hard for young people (Berk, 2014; Skinner & Zimmer-Gembeck, 2016). Especially adolescents' cognitive abilities for metacognition, i.e., abilities for reflecting on one's thoughts and emotions, are still developing (Berk, 2014; Luna, Garver, Urban, Lazar, & Sweeney, 2004; Travagin et al., 2015). Due to the so-called 'negativity bias', people generally tend to focus on the negative instead of the positive (Sparks & Ledgerwood, 2019). Research on the social sharing of emotions shows that adolescents often tend to dwell on the negative aspects of their experiences when sharing a personal narrative with others (Duprez et al., 2015; Rodríguez Hidalgo et al., 2015; Vermeulen et al., 2018). It was shown that this negativity bias may decrease with age and that it may be larger for young people compared to adults (Sparks & Ledgerwood, 2019).

Because of these reasons, balancing between the focus on the negative and the positive aspects of their experiences may be harder for young people compared to adults. Both research on expressive writing and the social sharing of emotions conclude that expressing negative emotions verbally or in a written form is important, but in contrast, overly focusing on negative emotions may result in negative effects (Rains & Keating, 2015). It may increase negative emotions in the short term and does not come with adequate solutions to a problem (Choi & Toma, 2014; Pennebaker & Seagal, 1999; Rimé et al., 2019; Wright & Chung, 2001). For example, research on expressive writing with adolescents showed that those who overly focused on the negative within their personal narrative, internalized problems more and experienced higher negative mood after the writing intervention (Fivush

et al. 2007). In the long term, rumination and worry may eventually result in more symptoms of depression and anxiety in adolescents (Young & Dietrich, 2015).

More specific expressive writing instructions for young people

Due to the beforementioned difficulties, studies on expressive writing with young people suggest they may need additional help with their writing to strengthen the positive effects and temper the negative effects of expressive writing (Facchin et al., 2014; Travagin et al., 2015). It was suggested that a standard expressive writing intervention, mainly focused on the expression of emotions and thoughts, may not be the most effective for adolescents.

Travagin and Margola (2016) explain specifically for the case of adolescents that "what counts is that the type of writing instructions matches the areas in which the adolescent still needs guidance, that is, intensive self-immersion in a narrative that includes stressful memories, causal explanations, meta-cognitive awareness, and future orientation mastery" (p. 1058). Therefore, these researchers suggested that young people may benefit from more cognitively oriented and structured writing instructions (Travagin et al., 2015; Travagin et al., 2016). This may help young people to shift away from merely retelling and reexperiencing the negative event and accompanying emotions toward reappraisal of those events leading to new insights and resolutions (Travagin et al., 2015; Travagin et al., 2016).

Applying expressive writing theory to the context of peer-to-peer support websites

Personal narratives on peer-to-peer support websites vs. expressive writing

Although writing personal narratives on peer-to-peer support websites does not necessarily align with an expressive writing intervention in the strict sense because it occurs more spontaneously, writing personal narratives on a peer-to-peer support website still resembles expressive writing for a few reasons.

First of all, according to the meta-analysis by Frattaroli (2006), writing in an offline or online context was evenly effective. Therefore, more recent research has implemented expressive writing interventions in online contexts (e.g., as a stand-alone intervention or within social networking sites such as Facebook) and have proven their effectiveness in adult and young adult samples (e.g Baikie et al., 2012;

Chaudoir et al., 2021; Frankfurt et al., 2019; Green et al., 2017; Hirai et al., 2020; Lee et al., 2016).

Secondly, similar to an expressive writing intervention, users of peer-to-peer support websites come to these websites with a specific distressing event in mind and put these experiences, emotions, and thoughts into words in a narrative manner. Since users are often looking for social support, they mostly write about current distressing events. It is thought that writing about current distressing events leads to the strongest effects (e.g., Frattaroli, 2006).

Lastly, it is suggested by previous research that additional social support responses also strengthen the positive effects and counter the negative effects of expressive writing (Pennebaker & Seagal, 1999; Pennebaker, Facchin, & Margola, 2010; Wright & Chung, 2001; Milbury & López, 2017; Biniel-Nissim, 2013; Facchin et al., 2014; Rains & Keating, 2015). Thus, apart from the positive effects resulting from the act of writing a personal narrative, the availability of additional social support from other users on peer-to-peer support websites may strengthen these effects of writing a personal narrative even more.

Altogether, expressive writing theory seems an interesting theory to apply in the context of peer-to-peer support websites. In line with the research on expressive writing theory, we can assume that writing one's personal narrative on a peer-to-peer support website may come with similar positive effects on young people's emotional well-being and coping self-efficacy, as is the case for an actual expressive writing intervention. However, we could only find a handful of studies that applied expressive writing theory to online communities similar to the peer-to-peer support websites as we define them in this dissertation (Ma et al., 2017; Ma et al., 2021; Morris et al., 2015). One study showed that users declared that the writing of personal narratives was a motivation for use itself and an important factor in sustained use of the online community (Ma et al., 2017). This is an interesting finding because it shows that users consider the mere act of writing their personal narrative as a motive for use, regardless of the social support responses they may or may not get afterward. The researchers, therefore, suggested taking the effects of expressive writing into account when designing a peer-to-peer support website (Ma et al., 2017).

Pitfalls of writing personal narratives on peer-to-peer support websites

It is important to take into account that negative effects when writing personal narratives on peer-to-peer support websites may also occur. Previous research has shown that peer-to-peer support websites may struggle with a negativity bias, as we explained earlier. Users often come to these websites when they are confronted with stressful events. As a result, research found that personal narratives written on peer-to-peer support websites tend to be more negative in nature (Rodríguez Hidalgo et al., 2015; Yang, 2019).

Earlier we explained that research on the social sharing of emotions and expressive writing found that this negativity bias may aggravate negative emotions in the short term (Choi & Toma, 2014; Pennebaker & Seagal, 1999; Rimé et al., 2019; Taylor et al., 2016; Wright & Chung, 2001). Research on the social sharing of emotions concluded that sharing negative emotions in an online platform had a higher negative effect than sharing negative emotions in an in-person situation, because of insufficient sources of support by others in an online context (Choi & Toma, 2014). This may not entirely apply to the context of peer-to-peer support websites, since their purpose is to lend users a space to share social support messages with each other. However, it is still important to note that not all writers on peer-to-peer support websites may get the social support responses they were looking for and may therefore not be able to buffer against the negative effects of writing. In addition to that, a study on expressive writing with young adults showed that young people who scored high on a scale for public self-consciousness and were told that their personal narrative would be shared with others, experienced generally more negative emotions after writing, even if it was shared in an anonymous way (Green et al., 2017). It is possible that young people are much more affected by this than adults since they place a big value on the judgments of their peers.

Writing instructions and interface adaptations to promote reflection

To overcome the negativity bias on peer-to-peer support websites, it may be important to help young people reflect more effectively about their distressing experiences. However, current peer-to-peer support websites seem to give little or no information on how to write a ‘constructive’ personal narrative.

In this dissertation, we propose that peer-to-peer support websites could offer young people specific writing instructions and perform interface adaptations to help young people reflect more effectively on their distressing experiences and write their personal narratives. One of the few studies that apply expressive writing theory in the context of peer-to-peer support websites already suggested that "designers of social support websites should consider mechanisms that encourage users to engage in cognitive reflection processes, and [to] thoroughly express themselves with some frequency. This could potentially help users construct more meaningful narratives and get more benefits out of the online community." (Ma et al., 2017; p. 73:18). However, until now almost no studies have followed up on the recommendation to test writing instructions on peer-to-peer support websites for young people (e.g., Facchin et al., 2014; Lee et al., 2016).

We explained earlier that the social norm to share the negative is inherently part of the definition of peer-to-peer support websites as we defined them in this Ph.D. project. It is therefore important to note that peer-to-peer support websites should stay a space where young people can share the negative (and the positive) without too many restrictions. Writing instructions or interface adaptations should therefore always serve the purpose of stimulating, rather than restricting young people's personal emotional expressions, but in a way that is most beneficial to writers themselves.

Writing personal narratives: Research gaps, objectives and specific application of expressive writing theory in this dissertation

What precisely do we take away from the previous literature review on expressive writing for peer-to-peer support websites for young people? Based on the previous literature review, we suggest that young people who write their personal narrative on a peer-to-peer support website may experience effects on their emotional well-being and coping self-efficacy about a stressful event at hand, regardless of the social support responses they will receive from other users afterwards. However, this literature review on expressive writing also shows that meaning-making processes underlying the positive effects of expressive writing may still be hard for young people who may be inclined to focus on the negative when sharing

their distressing experiences with others. They may need more specific writing instructions to support them in their writing process.

This dissertation builds upon the following research gaps. First of all, we know that the general use of peer-to-peer support websites relates positively to young people's perceived social support and therefore also to their emotional well-being. But it is not yet clear how the use of peer-to-peer support websites, and writing personal narratives on these websites, relates to young people's coping self-efficacy. In chapter 1 we first examine adolescent users' perspectives on sharing, reading, and responding to personal narratives on peer-to-peer support websites and how this contributes to their overall coping self-efficacy.

Secondly, research on expressive writing with young people is still scarce. With this dissertation, we mean to build upon existing research to test expressive writing instructions with young people in an online context. In chapter 2 we further extend expressive writing theory by testing different writing instructions with young people in an online context. More specifically, we test expressive writing instructions focused on changing primary and secondary appraisals of a stressful event and how these affect young people's emotional reactions and coping self-efficacy about a distressing event.

Lastly, because expressive writing theory has not often been applied to the context of peer-to-peer support websites, it is not yet clear how similar writing instructions are evaluated by young users of peer-to-peer support websites. In chapter 4 we apply a specific writing instruction to the interface design of a fictitious peer-to-peer support website and examine how adolescent users experience the use of writing instructions and how this relates to their attitude toward the website and intention to use a similar website in the future.

We formulate the following research questions:

What is the relationship between specific actions (i.e., experience with sharing, reading, responding to personal narratives), social support motives and coping self-efficacy after using peer-to-peer support websites?

Can different expressive writing instructions focused on changing primary and secondary appraisals of a stressful event affect young people's emotional reactions to that stressful event?

How do adolescent users of a social support website experience the use of writing instructions? And how does this affect their attitude toward the website and intention to use the website in the future?

In empirical chapter 2 we will ask young people to write a personal narrative about their personal experiences with the COVID-19 pandemic and examine how this effects their emotional reactions and coping self-efficacy in relation to the event in question. We pragmatically operationalize this by presenting young people with a typical expressive writing instruction and asking them to write 10 sentences or more to ensure they elaborate enough on their experiences to qualify for a personal narrative. In empirical chapter 4 we go one step further and apply a cognitive oriented therapeutic technique, closely resembling the design of an expressive writing exercise, in the interface of a ficticious social support website to help young people elaborate on their personal experiences. For more specific details on the methods we used, consult the methods section of chapter 2 and 4.

Reading personal narratives on a peer-to-peer support website

From a social support perspective on peer-to-peer support websites, passive users (i.e., users who mainly read personal narratives of others) do not fully benefit from the use of peer-to-peer support websites, because their opportunities for the exchange of personal social support messages with other users are limited.

From a narrative perspective, we expect that merely reading personal narratives of others may already have a positive effect on readers' emotional well-being and coping self-efficacy, regardless of the exchange of social support messages with other users. To substantiate this premise, we primarily rely on narrative persuasion theories.

Narrative persuasion theories: What is it?

Social Cognitive Theory by Bandura (2001) assumes that people can learn from exemplary figures in their environment to increase their self-efficacy concerning a certain behavior. Bandura refers to this by explaining that 'vicarious experiences' by others can form an important source of information (Bandura, 1978). Thus, others' experiences on stressful events and (un)successful coping efforts can form important examples for young people to learn how to deal with stressful situations and become confident in their coping abilities.

Based on Social Cognitive Theory, research on narrative persuasion found that for the same reason (non-)mediated narratives can affect people's emotional well-being and coping self-efficacy (e.g., Braddock & Dillard, 2016; Perrier & Ginis, 2018; de Graaf et al., 2016). Meta-analyses show that narratives, both real and fictional, may have significant effects on beliefs, attitudes, intention for action, actual behavior, and self-efficacy (Braddock & Dillard, 2016; Perrier & Ginis, 2018; de Graaf et al., 2016; Shen et al., 2016) and that the specific effects may depend on content, form, and context (de Graaf et al., 2016). Certain narrative characteristics, especially a sense of similarity between characters, settings, and events (Green, 2004; Hoeken et al., 2016) and emotionality (Nabi & Green, 2015), are found to strengthen the persuasive effect. Narratives have often been used in a health-related context to promote healthy physical and mental habits and behaviors (De Graaf et al., 2016; Perrier & Martin-Ginis, 2018; Shen & Han, 2014).

Studies on narrative persuasion with young samples, such as adolescents or young adults are relatively scarce. It is suggested that the effects of narratives on young people may differ from the effects on adults, because their emotional and cognitive skills are still being developed (De Graaf et al., 2016). For this reason, studying narrative persuasion with adolescents and young people is an interesting research avenue.

Applying narrative persuasion theories to peer-to-peer support websites

Advantages of reading personal narratives

Although narrative persuasion theory has not often been applied to personal narratives on peer-to-peer support websites, it seems a promising approach for this context.

As explained in our definition of peer-to-peer support websites, their specific characteristics most likely lead to narrative-like messages that are written from a first-person perspective, are emotional in tone, and show a realistic representation of someone's experiences. Previous research departing from narrative persuasion theory found that precisely these narrative characteristics (i.e., a first-person perspective, De Graaf, Hoeken, Sanders, & Beentjes, 2012; high emotionality, Nabi, 2015; and realism; Hoeken & Sinkeldam, 2014) may increase the persuasive power of narratives (de Graaf et al., 2016).

Because readers on peer-to-peer support websites deliberately seek emotional and informational support (e.g., Welbourne et al., 2013), readers are most likely to take others' personal narratives as examples. They may compare the content of these narratives with their own experiences and coping strategies and may therefore learn how to cope with similar experiences.

If we apply these theories to the context of peer-to-peer support websites, we may assume that by reading the personal narratives of others, young people may feel better about their own personal experiences, learn new effective coping strategies from others' personal narratives and strengthen their self-efficacy concerning coping strategies. To our knowledge, not a lot of studies have applied narrative persuasion theory in the context of peer-to-peer support websites.

Pitfalls of reading personal narratives

However, although personal narratives may have positive effects on readers' emotional well-being and coping self-efficacy, reading the personal narratives of others about distressing experiences may also affect readers' emotional well-being and coping self-efficacy in a negative way.

In the previous section on writing personal narratives, we explained that peer-to-peer support websites may struggle with a negativity bias. Users often come to these websites when they are confronted with stressful events and try to find social support from others to learn how to cope with these situations. As a result, research found that personal narratives written on a peer-to-peer support website tend to be more negative in nature (Rodríguez Hidalgo et al., 2015; Yang, 2019). It was suggested that a focus on the negative aspects of one's experiences by users of peer-to-peer support websites may leave both writers and readers with more stress and anxiety (Rains & Wright, 2016). For example, research has previously warned that the negative content posted by others may exacerbate readers' negative emotions and worries (Prescott et al., 2017). This is a problem that was brought on by young adult users of peer-to-peer support websites themselves (Lazard et al., 2021).

Apart from increasing negative emotions among readers, personal narratives of others may also influence readers' coping self-efficacy in a negative way. Just as readers may adopt positive approaches to a problem from others' personal narratives, they may also adopt sharers' negative coping approaches. For example, a study on blogs about eating disorders showed that users sometimes do not seem to regard their behavior as problematic and instead go on to give each other tips on sustaining and promoting the harmful behavior (Tong et al., 2013). Within health-related contexts there is also a concern that users may take to heart the wrong medical information based on experiences of others (Giesler et al., 2017). People sharing false information was also a concern that was brought on by young adults using online social support sources (Lazard et al., 2021). Thus, we can say that the negative effects may in some cases override the positive effects of reading personal narratives of others.

It is important to note that the negativity bias on peer-to-peer support websites may not only affect readers' emotional well-being and coping self-efficacy directly but may also influence readers to write more negatively about their own distressing experiences. We refer to this effect using the concept of emotional contagion. Goldenberg & Gross (2020) define emotional contagion as "the process by which the emotions of a perceiver become more similar to those of others as a result of exposure to these emotions" (p. 317). Researchers have come to investigate these

concepts in a digital context as well. In this case, it is often referred to as 'digital emotion contagion' (Goldenberg & Ross, 2020). Whereas digital emotion contagion has been studied especially in the context of social media (e.g., Coviello et al, 2014.; Crocamo et al., 2021), research on emotional contagion on peer-to-peer support websites is scarce. Only one very recent longitudinal field study over a period of 4 weeks confirmed digital emotion contagion processes in an online depression community (Tang et al., 2021). The researchers concluded that frequent negative emotions seemed to aggregate negative emotional expression among other users as well (Tang et al., 2021).

It is thought that the effects of emotional contagion may go beyond merely experiencing the same emotions and may also affect how people think about a certain situation. A related concept, called 'social appraisal', refers to the idea that "the receiver integrates information derived from the sender's emotional expression into his or her own evaluation of the situation and, as a result, into his or her own feelings about the situation" (p. 438; Wróbel & Imbir, 2019). Based on this, the person will change their own interpretation, evaluation, or appraisals of a certain event based on those of the other (Goldenberg & Ross, 2020; Wróbel & Imbir, 2019).

Positively versus negatively framed personal narratives

The relative positive or negative effects of the use of personal narratives on peer-to-peer support websites on readers' emotional well-being and coping self-efficacy may depend upon the tone and content of the personal narratives of others that they encounter on these websites. We propose that readers may benefit more from personal narratives in which the writer not only describes their distressing experiences and the emotions and thoughts resulting from them but also reflects on the positive sides of their experiences.

More specifically, narrators' positive reflection upon their coping self-efficacy may have a positive impact on readers' emotions and self-efficacy. According to Bandura, "showing the gains achieved by effortful coping behavior not only minimizes for observers the negative impact of temporary distress but demonstrates that even the most anxious can eventually succeed through perseverance." (1978, p. 145). Furthermore, this may be especially the case when the reader perceives similarities

between their own experiences and those of the writer: “Similarity to the model in other characteristics, which increases the personal relevance of vicariously derived information, can likewise enhance the effectiveness of symbolic modeling” (Bandura, 1978; p. 145).

It was already shown by previous research on peer-to-peer support websites that more positively framed personal narratives may have more benefits to readers than more negatively framed narratives. For example, qualitative research among young adults with cancer who use online social support sources showed that the participants declared that the success stories of other users helped readers to feel hopeful about their own future, whereas reading about others’ negative outlooks was discouraging and even anxiety-provoking (Lazard et al., 2021). Other research within an online health community about weight loss showed that more positive framed narratives, in this case, successful experiences in which the narrator described personal success with certain weight loss behaviors, generated more interaction among readers (Wang & Willis, 2018).

Research suggested that to overcome a negativity bias on peer-to-peer support websites for young people, platforms could help users to reduce posting and spreading harmful and discouraging content by, for example, prompting users to rethink and revise what they are about to share (Lazard et al., 2021). This is also the starting point of chapters 2 and 4 of this dissertation.

Reading personal narratives: Research gaps, objectives and specific application of narrative persuasion theories in this dissertation

What precisely do we take away from the previous literature review on narrative persuasion for the context of peer-to-peer support websites for young people? We may assume that young people who read personal narratives of others on peer-to-peer support websites, may experience positive effects on their emotional well-being and coping self-efficacy in relation to the stressful event at hand, regardless of the social support responses they will receive from other users afterwards. However, it is important to note that a negativity bias on peer-to-peer support

websites may also leave young readers with more anxiety and stress concerning their personal experiences.

First of all, narrative persuasion has not often been applied to the context of social support websites. We start from this theory to examine the effects of positively vs. negatively framed personal narratives about distressing events on readers' emotional well-being and coping self-efficacy. In chapter 3 we study the difference between two narratives in which the writer either shows low or high coping self-efficacy narrative concerning a distressing event. In addition, we study the moderating effect of several narrative persuasion processes, such as similarity.

We formulate the following research questions:
How do high and low coping self-efficacy narratives affect young readers' emotions and coping self-efficacy in relation to a stressful event?
And what is the moderating role of identification and similarity?

In empirical chapter 3, participants were asked to read a personal narrative of someone dealing with the negative consequences of the COVID-19 pandemic and the measures taken by the government. For this purpose, two narratives were adapted from narratives that were collected in chapter 2. We examined changes in young people's emotions and coping self-efficacy as a result of this reading exercise. For more specific details on the methods we used, consult the methods section of chapter 3.

Table 1. Chapter overview

	Chapter overview	Research questions	Method
Exploratory study	Chapter 1	RQ: What is the relationship between specific actions (i.e., experience with sharing, reading, responding to personal narratives) social support motives and coping self-efficacy after using peer-to-peer support websites?	Online survey with Dutch- speaking adolescent users of peer-to-peer support websites (14 to 18 years old)
Writing personal narratives	Chapter 2	RQ: Can different expressive writing instructions focused on changing primary and secondary appraisals of a stressful event affect young people's emotional reactions to the stressful event in question?	Two online experiments with Flemish adolescents and young adults (14 to 25 years old)

	Chapter overview	Research questions	Method
Reading personal narratives	Chapter 3	RQ: How do high and low coping self-efficacy narratives affect young readers' emotions and coping self-efficacy in relation to a stressful event? RQ: What is the moderating role of identification and similarity?	Online experiment with Flemish young adults (18 to 25 years old)
Interfaces	Chapter 4	RQ: How do adolescent users of a peer-to-peer support website experience the use of writing instructions? RQ: And how does this affect their attitude toward the website and intention to use the website in the future?	Online experiment using a fictitious peer-to-peer support website with Flemish adolescents (14 to 18 years old)

CHAPTER 1

COPING WITH DISTRESS AMONG ADOLESCENTS:

Effectiveness of personal narratives on support websites

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Abstract

Sharing, reading and responding to personal narratives on peer-to-peer support websites may provide adolescents with informational and emotional support to feel more confident in coping with stressful events. However, their use may also pose a threat to adolescents' coping self-efficacy. Principles of expressive writing, social sharing of emotions, narrative persuasion and self-effects may provide insight in how these actions may both positively and negatively relate to coping self-efficacy. By using a cross-sectional online survey with 311 Dutch-speaking adolescents between the ages of 14 and 18, this article explores how these actions and social support motives (i.e., information-seeking and emotional support-seeking) are related to adolescents' perceptions about the usefulness of these websites to their coping self-efficacy. The results showed a positive relation between adolescents' social support motives and their belief in the usefulness of these websites to their coping self-efficacy. Therefore, we conclude that it may be an effective coping strategy for many adolescents. There was a negative relation between experience with sharing a personal narrative and coping self-efficacy, meaning that these users did not perceive the website to be helpful to their overall confidence in coping with stressful events. However, this negative relation was reversed when they were motivated to find emotional support with similar others.

Introduction

The World Health Organization (2018) states that 1 out of 5 adolescents between the ages of 15 and 19 in the European Region have some form of psychological difficulty. It is therefore important to improve adolescents' coping beliefs and skills, as these may moderate the impact of stressful life events on mental and physical health and functioning (Skinner & Zimmer-Gembeck, 2016).

One important coping strategy is social support seeking, which is defined as "the strategy of turning to other people in the face of stressful events" (Skinner & Zimmer-Gembeck, 2016: 38). However, adolescents might feel uncertain to ask for help from peers in their personal, offline environment. There are two main reasons for this. First, adolescents often believe their personal experiences are unique from those of others and that others cannot possibly help them (Neff & McGehee, 2010). Second, their heightened awareness of others' judgement, makes it harder to look for support in their direct environment.

The specific characteristics of anonymous peer-to-peer support websites (e.g., safety, mutual social norms) make social support with peers more accessible for those who feel reluctant to seek support in an offline context (Prescott et al., 2017; Sun et al., 2014; Vermeulen et al., 2018). The use of personal narratives on peer-to-peer support websites may provide adolescents with informational and emotional support to feel more confident in coping (i.e., increase their coping self-efficacy). Based on de Graaf et al. (2016) we define an online personal narrative as an online presentation of (a) concrete event(s) experienced by (a) certain person (people) in a specific setting. While several studies found that their use has positive effects on well-being and self-efficacy with adults (Frattaroli, 2006; Rains & Wright, 2016; Rains & Young, 2009), their effects on adolescents are not often studied (Ali et al., 2015; Barak & Dolev-Cohen, 2006; Yang, 2018). Moreover, recent research has warned about the possible negative effects of online co-rumination on adolescents' mental health (Frison et al., 2019).

By using a cross-sectional online survey with Dutch speaking adolescents between the ages of 14 and 18 who use peer-to-peer support websites, we examined the relationship between specific actions (i.e., experience with reading, responding

and sharing) and social support motives (i.e., information-seeking on a question or problem and emotional support-seeking with similar others) are related to adolescents' perceptions about the usefulness of these websites to their coping self-efficacy. We integrate different insights, such as expressive writing theory, self-persuasion and narrative persuasion to explain how the use of anonymous peer-to-peer support websites may have both positive and negative effects on adolescents' coping self-efficacy.

Literature review

Online personal narratives and coping self-efficacy

Sharing: Expressive writing and social sharing of emotions

To explain the relationship between sharing one's own personal narrative and coping self-efficacy, we rely upon the literature on expressive writing theory and social sharing of emotions. The first implies that someone writes about his/her deepest thoughts and emotions, which allows to reorganize thoughts, gain new insight and reflect upon his/her coping strategies (e.g., How did I cope before? How can I cope better?) (Pennebaker & Seagal, 1999). It was found to come with multiple positive outcomes on well-being, such as lowered depressive symptoms and anxiety and higher coping self-efficacy, and these benefits are likely to be higher if this task is repeated over multiple sessions (Frattaroli, 2006). For example, a study on expressive writing with adolescent girls showed that the respondents had more adaptive coping strategies after 3 sessions of writing about a personal problem (Vashchenko et al., 2007).

Adolescents may not have required all needed competences for effective reflection on stressful experiences (Berk, 2014; Skinner & Zimmer-Gembeck, 2016). Research on the social sharing of emotions shows that adolescents often have the tendency to dwell on the negative aspects of their experiences when sharing a personal narrative with others (Duprez et al., 2015; Vermeulen et al., 2018). This is likely to make emotions worse in the short term (Choi & Toma, 2014; Pennebaker & Seagal, 1999; Wright & Chung, 2001). Longitudinal research also found rumination and worry may eventually result in more symptoms of depression and anxiety with adolescents (Young & Dietrich, 2015). Some adolescents may therefore benefit from the support of others, preferably from peers with similar experiences, to

make sense of their experiences (Pennebaker & Seagal, 1999; Skinner & Zimmer-Gembeck, 2016).

Reading: Social cognitive theory and narrative persuasion

The effects of personal narratives on readers may be explained by social cognitive theory and literature on narrative persuasion. Social Cognitive theory assumes that people can learn from exemplary figures in their environment (Bandura, 2001). Based on this theory, research on narrative persuasion found that narratives have significant effects on beliefs, attitudes, intention for action, actual behaviour and self-efficacy (Braddock & Dillard, 2016; Perrier & Martin-Ginis, 2018). Because readers may take others' personal narratives as examples, they may learn how to cope with their own distressing experiences. The premise is that the more frequent adolescents read personal narratives of others, the higher the beneficial effects may be (Braddock & Dillard, 2016).

However, it is possible that readers may also adopt sharers' negative coping approaches and self-efficacy beliefs. For example, a study on blogs about eating disorders showed that users sometimes do not seem to regard their behavior as problematic and instead go on to give each other tips on sustaining and promoting the harmful behavior (the use of pro-ana blogs, 2019). Recent research found that stories portraying a protagonist with high self-efficacy beliefs influenced readers' own self-related control beliefs in a positive way. But the researchers warned that the opposite might be true as well; that low self-efficacy beliefs by the protagonist may also influence readers' self-related control beliefs in a negative way (Isberner et al., 2019). Thus, both the content of the suggestions given by others as well as others' general coping self-efficacy may influence readers.

Responding: Self-effects and self-persuasion

Based on literature on self-effects on social media, we may expect that giving others the right advice on coping strategies may be a form of self-presentation leading to self-persuasion (Stavrositu & Kim, 2018; Valkenburg, 2017). After providing useful advice to others, responders might regard themselves as experts in coping with stressful events, therefore feeling more confident in setting the right coping behaviours themselves.

However, research also found responders often respond with their own similar negative experience (Bastiaensens et al., 2019; Prescott et al., 2017), therefore risking to start a thread of co-rumination. This concept refers to the repeated exchange of a certain problem between two or more people while focusing on the negative aspects, emotions and thoughts (Rose et al., 2017). Recent research on private conversations on social media found that co-rumination predicted depressive symptoms among adolescents between 12 and 19 years old (Frison et al., 2019).

In sum, there may be positive and negative aspects to adolescents' use of personal narratives on peer-to-peer support websites. The main goal of this research is to explore how adolescents' use of personal narratives on peer-to-peer support websites (i.e., sharing, reading and responding to personal narratives) is related to their coping self-efficacy after using these websites. This reflects whether or not adolescents perceive the use of these websites to be helpful to their confidence in coping with stressful events.

RQ1: How do specific actions (i.e., experience with sharing, reading, responding to personal narratives) relate to adolescents' coping self-efficacy after using peer-to-peer support websites?

Social support motives and coping self-efficacy

Informational and emotional support as a coping strategy

In order to overcome the possible negative effects of personal narratives on peer-to-peer support websites, it may be important for adolescents to find the social support they need. For example, research on expressive writing (Milbury & López, 2017; Pennebaker & Seagal, 1999; Travagin et al., 2015) and the social sharing of emotions (Rimé et al., 2019) assumes social support of others may strengthen the positive effect and counter the negative effects of writing about distressing events. Previous research on online social support use also found that the level of perceived social support mediates the positive outcomes of online social support use on well-being, both in adult and adolescent populations (Welbourne et al., 2013). According to the theory on social sharing of emotions, support seeking serves two

purposes: either looking for informational support, i.e., advice and information on ways to cope with a distressing event, and emotional support, i.e., the exchange of affective and cognitive empathy to enhance mood and find recognition (Rimé, 2009). Research finds these same social support motives for users of peer-to-peer support websites (Welbourne et al., 2013).

Social support may be closely related to adolescents' coping self-efficacy. Informational support may help to "find out more about a stressful situation or condition, including its course, causes, consequences, and meanings, as well as learning about strategies for intervention and remediation" (Skinner & Zimmer-Gembeck, 2016: 37). Emotional support, in turn, resembles "the urge or desire to come into contact with an attachment figure" (Skinner & Zimmer-Gembeck, 2016: 38). It encourages frequent active use and accounts for the positive relation of online support use with perceived stress (Welbourne et al., 2013) and perceived coping resources (Nabi et al., 2013).

Thus, we expect that the informational support on a question or problem and the emotional support of similar others which adolescents find through sharing, reading and responding to personal narratives may help adolescents to feel more confident in coping with stressful events.

RQ2: How do social support motives (i.e., informational support on a question or problem and emotional support with similar others) relate to adolescents' coping self-efficacy after using peer-to-peer support websites?

Interactions between social support motives and actions

One action may fulfill one social support motive better than the other. For example, research found that passive users mainly have an information need, whereas active users more often have an emotional support need (Sun et al., 2014; Welbourne et al., 2013). Other research found that active use of peer-to-peer support websites improved psychological well-being through the emotional support from similar others (Sun et al., 2014; van-Uden-Kraan et al., 2008; Welbourne et al., 2013), whereas informational support accounted for readers' improvement in

psychological well-being (van-Uden-Kraan et al., 2008).

Therefore, it is interesting to explore the relation between the two social support motives and users' experience with actions, and the possibility of an interaction-effect between the two on coping self-efficacy.

RQ3: How do social support motives (i.e., informational support on a question or problem and emotional support with similar others) relate to specific actions (i.e., experience with sharing, reading, responding to personal narratives)?

RQ4: How do interactions between social support motives and actions relate to adolescents' coping self-efficacy after using peer-to-peer support websites?

Methods

Procedure

We conducted a cross-sectional survey study with users of peer-to-peer support websites, in this case, adolescents between 14 and 18 years of age. The online survey was distributed with the help of 10 Dutch and Flemish peer-to-peer support websites. All participating websites allowed users to exchange narratives about personal experiences anonymously. Only some of them allowed readers to give a social support response to those narratives. These included peer-to-peer support websites, which allow users to directly exchange personal narratives and social support responses with each other, and youth (health) information websites, which inform their users about common problems and questions by using personal narratives that are submitted by their users. These websites covered various problems and questions that are important to the adolescence life phase. Some focused on specific themes, such as sexuality, sexual identity or school-related problems.

The participating websites distributed the link to the online survey through their social media platforms or via their webpages meant for the exchange and reading of personal narratives. The participants were asked to clarify which of the

participating websites they had visited during the past 12 months to make sure to include only those adolescents who were then making use of these websites or had used these websites in the past. The survey remained online for 20 days, including 2 weekends. A total of 311 adolescent peer-to-peer support website users completed the survey. About 80% were girls, and the mean age was 15.87 years (SD=1,33 years).

Measures

Social support motives

Social support motives were measured with two items on a scale from 1 (not applicable at all) to 5 (definitely applicable). Items were respectively "I use websites with personal narratives... to search for information about a problem/question I am facing" and "... to connect with people like me for emotional support".

Experience with action

Previous research only made a distinction in passive (i.e., only reading) and active use (i.e., also responding and sharing) by asking respondents whether they contributed to the website or not (e.g., van-Uden-Kraan et al., 2008). In this study, we wanted to make a distinction between sharing a personal narrative oneself and responding to personal narratives of others. Experience with reading and responding to others' personal narratives were both measured with a scale from 1 to 4 (1=never, 2=once, 3=less than 5 times, 4=five times or more), measuring users' general experience with these actions in the past 12 months. Sharing personal narratives was measured with a scale from 2 to 8, reflecting sum scores of sharing personal narratives on support fora and (health) information websites (both measured on a scale from 1 to 4; see above). These measures were chosen in agreement with the participating websites, who stated that frequent passive users visit their websites 5 times or more in the course of a year and frequent active users post 5 times or more during the course of a year.

Coping self-efficacy

We used the Coping Self-efficacy scale (CSE) by Chesney et al. (2006). This scale contains three factors that relate to self-confidence in using effective coping styles, i.e., using problem-focused coping strategies to solve a problem (CSE problem, 6 items), overcoming unpleasant emotions and thoughts (CSE emotion, 4 items), and

getting support from friends and family in an offline context (CSE support, 2 items). We will use the abbreviated form of these factors when describing the results of this study. One item was left out from the original scale, because it had a low factor loading (i.e., making new friends). The scale was introduced using the following sentence: "After using personal narratives on these websites (either reading others' personal narratives, reacting to others' personal narratives and/or sharing my own personal narratives) I have more confidence in myself to...". This measure reflects how useful they find these websites to their confidence in coping with stressful events. Items were measured on a scale from 1 (not at all) to 7 (totally).

Data analyses

Univariate and bivariate statistics were calculated in order to explore the correlations between the variables. A measurement model was tested in Mplus 8.3 using confirmatory factor analysis (as suggested by Anderson & Gerbing, 1988). We used the three factors of coping self-efficacy as three separate dependent variables in the model. The goodness-of-fit criteria indicated that the measurement model fitted well (CFI=.984; RMSEA=.034, 90% C.I. [.000-.055]; $\chi^2(41)=55.77$, p=.06). The standardized factor loadings of the six items of the latent construct CSE problem ranged from .63 to .73, the factor loadings of the four items of the latent construct CSE emotion ranged from .69 to .74, and the factor loadings of the two items measuring CSE support were .80 and .95. In a next step, structural equation modeling was applied in order to investigate the associations between the main variables using Mplus with MLR estimation.

Results

Descriptives

Table 2 shows the correlations between the variables. The mean score of information-seeking and emotional support-seeking was respectively 3.63 (SD=1.39) and 2.30 (SD=1.81). These social support motives were uncorrelated, reflecting that these are distinctive motives. About 60% of all respondents read 5 or more personal narratives during the past 12 months. 60% had never responded to a personal narrative, whereas 15% had responded more than 5 times. 40% had shared their own personal narrative at least once during the past 12 months. All actions were correlated, especially responding and sharing.

This means that those who share personal narratives are also more likely to respond to others' personal narrative and vice versa. In this sample CSE problem, CSE emotion and CSE support had mean scores of 4.18 (SD=1.22), 4.11 (SD=1.36) and 3.96 (SD=1.68). Especially CSE problem and CSE emotion were highly correlated. Thus, the more a participant believes that the use of these websites helps them to solve problems, the more s/he believes that they also help to cope with difficult emotions and thoughts, and vice versa.

Table 2. Descriptives and correlations

		1	2	3	4	5	6	7	8	9	10
1	*Gender*	--									
2	*Age*	0.75	--								
3	*Information seeking*	.102	-.096	--							
4	*Emotional support seeking*	.037	-.081	.072	--						
5	*Read*	0.15	-.008	.180**	.240***	--					
6	*Respond*	-.166**	-.174**	.037	.276***	.341***	--				
7	*Share*	-0.51	-.078	.083	.244***	.229***	.590***	--			
8	*CSE problem*	.124*	-0.79	.160***	.176**	.055	.009	-.024	--		
9	*CSE emotion*	.052	-.090	.085	.142*	.060	.025	-.036	.689***	--	
10	*CSE support*	.049	.001	-.013	.174**	.057	.058	-.002	.412**	.386***	--
	M		15,87	3,63	2,30	3,38	1,89	2,85	4,18	4,11	3,96
	SD		1,33	1,39	1,81	0,867	1,16	1,35	1,22	1,36	1,68
	Range		14 - 18	1 - 5	1 - 5	1 - 4	1 - 4	2 - 8	1 - 7	1 - 7	1 - 7

Note. CSE problem=self-efficacy in coping with a problem; CSE emotion = self-efficacy in coping with negative emotions and thoughts; CSE support = self-efficacy in asking friends and family for help.

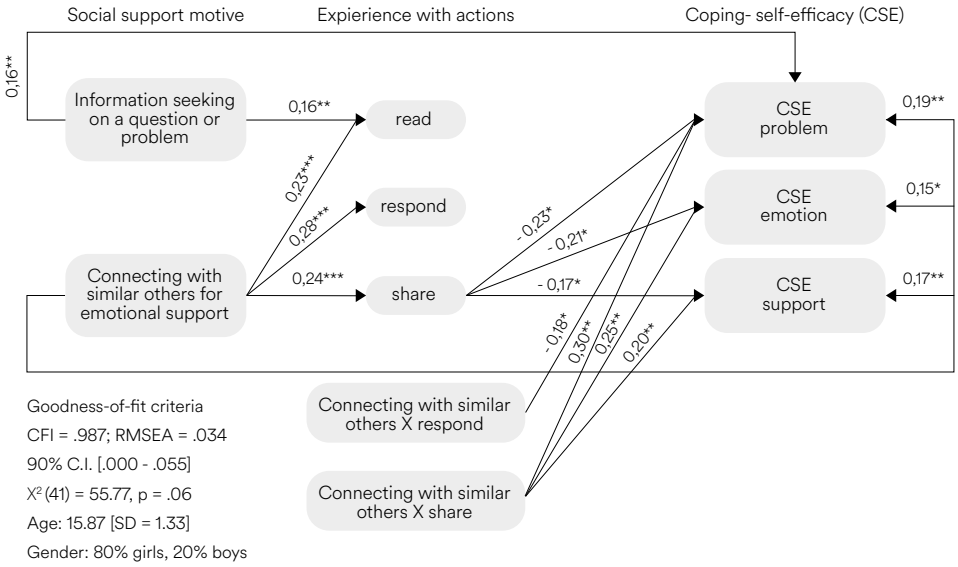
**p < .05. **p < .01. ***p<.001.*

Structural Equation Model

Figure 1 presents the standardized results of the Structural Equation Model. The fit indices showed a good fit for the model: CFI=.918; RMSEA=.049, 90% C.I. [.039 - .058]; $\chi^2(159)=275.96$, p<.001. The explained variances of the three different forms of coping self-efficacy ranged from .085 to .163 (CSE problem: .163; CSE emotion: .117; CSE support: .085).

First, the structured model revealed associations between social support motives and experiences with actions. Both motives, information seeking (β=.16, p<.01) and emotional support seeking (β=.23, p<.001), predicted experience with reading online personal narratives. Emotional support seeking predicted experience with responding to others' (β=.28, p<.001) and sharing one's own personal narrative (β=.24, p<.001), but information seeking did not predict these actions. Secondly, the model also showed the associations between motives and coping self-efficacy. Information seeking (β=.16, p<.01) and emotional support seeking (β=.19, p<.01) significantly predicted an increase in CSE problem. Furthermore, emotional support seeking also predicted an increase in CSE emotion (β=.15, p<.05) and CSE support (β=.17, p<.01). Third, the structural model consisted of associations between experiences with actions and different forms of CSE. Only one of the actions, experience with sharing one's own online personal narratives, significantly predicted changes in CSE. More experience with sharing one's own personal narratives online was associated with lower CSE problem (β=-.23, p<.05), lower CSE emotion (β=-.21, p<.05), and lower CSE support (β=-.17, p=.05). The latter association was borderline non-significant. Finally, the model indicated the importance of two specific interaction terms in predicting CSE. More precisely, the interaction between emotional support seeking and having experience with responding to online personal narratives was a significant negative predictor of CSE problem (β=-.18, p<.05). Furthermore, the interaction term between emotional support seeking and experience with sharing one's own narratives on peer-to-peer support websites significantly predicted an increase in CSE problem (β=.30, p<.001), CSE emotion (β=.25, p<.01) and CSE support (β=.20, p<.05).

Figure 1. Structural Equation Model



Discussion

General discussion of the results

This study aimed to explore the relationship between social support motives to use personal narratives on peer-to-peer support websites (i.e., information seeking about a question or problem and emotional support seeking with similar others), actions (i.e., experience with sharing, reading, responding to personal narratives) and adolescents' belief in the usefulness of these websites for their confidence in coping with stressful events (i.e., increase in coping self-efficacy). Coping self-efficacy was further divided in self-confidence in applying problem-focused coping strategies to solve problems, dealing with difficult emotions and thoughts, and finding support with friends and family in an offline context.

The positive relations between social support motives and actions show that information seeking is mainly a social support motive for frequent readers. In addition, emotional support seeking from similar others is a strong social support motive for users who have more experience with all actions (i.e., sharing, reading

and responding). Where other research suggests that readers mainly look for information in others' personal narratives (Sun et al., 2014; Welbourne et al., 2013), this finding reflects that readers may also look for emotional support.

The positive relations between social support motives and coping self-efficacy reflect that information-seeking may help users feel more confident in using problem-focused coping strategies to solve a problem (CSE problem). As explained before, Skinner & Zimmer-Gembeck also suggest that informational support is helpful to learn "about strategies for intervention and remediation" (Skinner & Zimmer-Gembeck, 2016: 37). Using these personal narratives for emotional support-seeking with similar others may help users to feel more confident in overcoming unpleasant emotions and thoughts (CSE emotion) and asking friends and family for help (CSE support). This is in line with previous research, which suggests that it lowers perceived stress (Welbourne et al., 2013) and strengthens perceived coping resources (Nabi et al., 2013). Emotional support-seeking was also related to higher confidence in using problem-focused coping strategies (CSE problem). It is likely that users believe similar others cannot only provide the best emotional support, but also the most specific and valuable information on how to solve familiar problems.

The results show that experiences with reading and responding are not related to any form of coping self-efficacy. This is not in line with the expectations based on literature on narrative persuasion and self-persuasion. A possible explanation is that the (positive and negative) effects of reading and responding to personal narratives on peer-to-peer support websites are small and subconscious. Moreover, this effect may be very dependent upon the specific narrative in question. Certain narrative characteristics, especially a sense of similarity between characters, settings and events (Green, 2004; Hoeken et al., 2016) and emotionality (Nabi & Green, 2015), are found to strengthen the persuasive effect.

A negative relation is found between experience in sharing personal narratives on peer-to-peer support websites and all forms of coping self-efficacy. Thus, adolescent users who have more experience with sharing personal narratives reported feeling less confident in using problem-focused coping strategies to solve a problem (CSE problem), overcoming unpleasant emotions and thoughts

(CSE emotion) and asking for help with friends and family (CSE support) after using peer-to-peer support websites. This means that these users did not perceive the use of these websites to be helpful to their confidence in coping with stressful events. As explained in the literature review, a possible explanation is that users who often write about distressing events reinforce their negative emotions (Choi & Toma, 2014; Wright & Chung, 2001). Or readers may respond with their own similar negative experiences, therefore starting a thread of co-rumination. It may also reflect that adolescents who submitted a personal narrative did not get the support they had hoped for or did not get a social support response at all. Although sharers have the motive to connect with similar others and hear about their experiences, some of the youth (health) information websites participating in this study did not allow readers to provide social support responses to sharers' personal narratives. This may affect how sharers perceived the usefulness of these websites to their confidence in coping.

The interaction effects between social support motives and experience with actions show that the benefits and threats to the use of these narratives may depend on the underlying motives for use. Firstly, the negative relation between sharing and all forms of coping self-efficacy is reversed when frequent sharers also have the motive to seek emotional support through the connection with similar others. Previous research already evidenced that getting social support and find social connection with similar others may maximize the benefits and minimize the costs of sharing a personal narrative (Milbury et al., 2017; Pennebaker & Seagal, 1999; Travagin et al., 2015).

Lastly, adolescents who are more experienced with responding to personal narratives of others and have the motive to seek support through the connection with similar others report feeling less confident in using problem-solving strategies (CSE problem) after using peer-to-peer support websites. A possible explanation is that responders are affected by negative emotions of sharers and therefore respond with their own negative experiences (co-rumination), which may reinforce their negative emotions (Bastiaensens et al., 2019). Another explanation may be a lack of credit for users' feedback (Bastiaensens et al., 2019). This may lead responders to believe their response was not useful, which may lower responders' confidence in dealing with difficulties themselves. This might be harder if adolescents respond to personal narratives to get into contact with similar others.

Practical implications

From this study, practical recommendations for peer-to-peer support websites may be derived. Previous research on online support websites has pointed out the need to adjust the interface design to users' expectations for maximal benefit (Li et al., 2015; Moses et al., 2018; Sun et al., 2014). This study shows that frequent users (sharers, readers, and responders) have the need to connect with similar others for emotional support. We suggest these websites to provide more possibilities for users to connect with each other and to make sure that responders are credited for their contributions. Nevertheless, it is not clear how respondents interpret this need for connection with similar others. For example, adolescents may look for users with similar experiences, but may also feel more comfortable disclosing to other users who are similar in terms of gender, age, hobbies, interests, etc. More qualitative research is needed to understand how the websites' characteristics and interface design may better respond to this need.

Based on expressive writing theory, self-persuasion and expressive writing, we suggest that an adapted interface design may help users to reflect more effectively on their experiences to improve their confidence in coping. Research on expressive writing claimed that writers may need to be steered in their reflection process in order to experience maximal benefits (Wright & Chung, 2001). This need may be higher for adolescents who have not yet developed all cognitive and emotional skills to reflect in an effective way about distressing events compared to adults (Travagin et al., 2015; Wright & Chung, 2001). For example, a study on an expressive writing intervention with adolescents found that providing adolescents with the instruction to write about the benefits of a distressing experience showed more positive results than a standard expressive writing intervention (Facchin et al., 2014). Lastly, these interface adaptations may also lead to more helpful narratives and feedback that better respond to readers' need for information.

We can also formulate recommendations for educational purposes. First, educators could give more attention to online peer-to-peer support use when addressing adolescents' internet literacy. Teachers should not only inform adolescents about the platforms that are available to them and the positive effects resulting from their use, but they should also address the possible negative effects, such as co-rumination, heightened negative emotions and risk for adopting negative coping

strategies. Secondly, schools could play an important role in adolescents' coping self-efficacy by offering coping competency trainings to help them distinguish between effective and ineffective coping strategies dependent upon specific situations.

Limitations and further research

Due to the small sample size and small percentage of male participants, we were not able to check for age and gender differences. However, social support needs and coping strategies may be linked to age and gender. Especially younger adolescents (approximately 12 to 15 years old) may not have required all needed competences for effective reflection on stressful experiences (Berk, 2014; Skinner & Zimmer-Gembeck, 2016). Due to gender socialization differences, writing about a stressful experience and co-rumination may have different effects on girls and boys (e.g., Yang, 2018; Frison et al., 2019). Research with adolescents showed that boys are more reluctant to use online social support resources and mental health apps than girls (Kenny et al., 2016). If boys do share experiences on stressful events, they may have different reasons to do so than girls. Research with young adults showed that boys would mostly look for empathy or attention or want to inform others when sharing emotional experiences (Duprez et al., 2015), while women would share their experiences more to vent about their emotions, find advice and support with others or find clarification about their experiences (Duprez et al., 2015). Similarly, previous research with young adults in the context of online communities found that boys prefer informational support, whereas women prefer emotional support (Xiaolin Lin et al., 2016). Since our sample mostly consisted of adolescent girls, the findings of this study may mostly apply to adolescent girls. Further research should strive for a more balanced sample in terms of age and gender. Moreover, this study did not take adolescents' general emotional state into account, which may have influenced how they perceive the use of peer-to-peer support websites.

This study used self-developed and self-report measures for social support motives and experiences with actions based on the coping literature and previous studies on peer-to-peer support use. Consequently, these measures were not validated by previous research.

There was only one measure for coping self-efficacy used to examine how useful participants find the use of these websites (by either sharing, reading or responding to personal narratives) to their confidence in coping with stressful events. In retrospect it would have been more interesting to measure this for each of the action possibilities separately to make a better comparison between the different action possibilities in relation to coping self-efficacy. In further research it is therefore recommend to measure coping self-efficacy for each of the action possibilities separately.

Finally, there are different ways to explain why some active users did not perceive the use of these websites to be helpful to their coping self-efficacy. We propose that the characteristics of the websites, such as interaction possibilities between users, may contribute to this effect. Due to the quantitative method we used, we could not take into consideration the characteristics and design differences between the peer-to-peer support websites that were part of our study. Further qualitative research methods, such as interviews and focus groups with adolescent users of peer-to-peer support websites are required to further explore adolescents' opinions and expectations regarding peer-to-peer support websites.

Many questions remain on the relationship between actions in relation to personal narratives (i.e., sharing, reading and responding) and coping self-efficacy. It is possible that the relations we propose are mostly subconscious. Therefore, experimental research is needed to study these relations in more detail.

Conclusion

By applying expressive writing theory, self-persuasion and narrative persuasion theory to the context of peer-to-peer support websites, the present study suggests that adolescents' use of personal narratives may both strengthen as well as pose a threat to adolescents coping self-efficacy depending on their specific actions and motives for use. Adolescents' informational and emotional support-seeking behavior on these websites may positively contribute to adolescents' confidence in coping with distressing events. However, those who frequently shared a personal narrative did not perceive the use of these websites to be helpful to their confidence in coping with stressful events. This may be due to heightened negative emotions and the risk for (co-)rumination. Nevertheless, those frequent sharers who also have the motive to connect with similar others for emotional support were more positive about the use of these websites. Therefore, we suggest that the possibility to connect with similar others on peer-to-peer support websites is an important factor. The current way in which adolescents exchange personal narratives on peer-to-peer support websites may not sufficiently serve the purpose of reflection on, and exchanging of, effective coping strategies. Further research should explore what expectations adolescents hold for peer-to-peer support websites and whether the interface design can help adolescent users to reflect more effectively on their stressful experiences and feel more self-confident in coping.

CHAPTER 2

WRITE POSITIVE, BE POSITIVE:

Expressive writing changes young people's emotional reactions towards the COVID-19 Pandemic

Adapted from: Mariën, S., Poels, K., & Vandebosch, H. (2022). Think Positive, be Positive: Expressive Writing Changes Young People's Emotional Reactions Towards the COVID-19 Pandemic. Frontiers in Education, 6. https://www.frontiersin.org/article/10.3389/feduc.2021.755896

Abstract

Combining the transactional model of stress and coping and expressive writing theory, we studied whether writing on one's personal experiences with the COVID-19 pandemic may improve young people's emotional reactions and coping self-efficacy in relation to the situation. We conducted two online experiments, one in the Spring of 2020 and the second in the Winter of 2020, in which we compared the effectiveness of different expressive writing instructions. The results of the first study showed that participants who were asked to write about positive aspects experienced a significantly higher positive change in feelings in relation to the COVID-19 pandemic. This relationship was not mediated by the relative contents of writing. In the second study we slightly adapted the writing instructions that were tested. The results of the second study showed that participants who were asked to write about positive aspects experienced no difference in relation to their feelings but experienced a significantly negative change in coping self-efficacy in relation to the COVID-19 pandemic. Participants who were asked to write about their effective coping strategies in relation to the COVID-19 pandemic did not experience a direct effect on feelings or coping self-efficacy, but those who wrote more about the positive aspects in relation to their experience did experience a higher positive change in feelings and coping self-efficacy. In this chapter we explain how the results of these studies can help in designing online social support interventions stressful events, such as the COVID-19 pandemic.

Introduction

During the COVID-19 pandemic, especially young people in adolescence and young adulthood are emotionally affected by the governments' measures to stop the spreading of the virus (Shanahan et al., 2020; Magson et al., 2021). Due to a lack of offline social support during the COVID-19 pandemic, Flemish peer-to-peer support websites for sharing personal experiences about stressful events with peers have massively increased in popularity with young people (De Maeseneer, 2020; Torbeyns, 2020).

The affordances of peer-to-peer support websites (e.g., accessibility, anonymity, mutual social norms to share the negative) make social support from peers more accessible for young people who feel reluctant or unable to seek support in an offline context (Schouten et al., 2007; Choi and Toma, 2014; Vermeulen et al., 2018; Prescott et al., 2019). Compared to social media, which also offer the possibility for support, the peer-to-peer support websites we address here are specifically developed to offer forums to allow young people to interact with peers to find informational and emotional support in times of stress. They may address a certain topic (e.g., health concerns) or a variety of topics that are important to the life phase of young people (e.g., health concerns, but also sexuality, peer and family conflicts, etc.). These forums are mostly text-based and anonymous, which results into narrative-like messages that we will refer to as personal narratives.

Meta-analyses have demonstrated that the use of peer-to-peer support websites by (young) adults has significant positive effects on various well-being outcomes, such as perceived social support, quality of life and self-efficacy in coping with stressful events (e.g., Rains and Young, 2009; Rains et al., 2015; Yang, 2018). However, research on the effects of peer-to-peer support websites on young people's well-being is scarce (Ali et al., 2015) and the literature suggests that these effects may also be different for young people, compared to adults, because of a number of reasons.

For instance, young people may not have developed all cognitive and emotional skills to reflect effectively about distressing events (Travagin et al., 2015; Taylor et al., 2016). Especially adolescents' cognitive abilities for metacognition, i.e., abilities

for reflecting on one's thoughts and emotions, are still developing (Berk, 2014; Luna, Garver, Urban, Lazar, & Sweeney, 2004; Travagin et al., 2015). Young people may also have the tendency to dwell on the negative aspects of their experiences and the negative emotions related to it, and as a result, may become overwhelmed with their own negative emotions (Choi and Toma, 2014; Taylor et al., 2016; Rimé et al., 2019). Due to the so-called 'negativity bias', people generally tend to focus on the negative instead of the positive (Sparks & Ledgerwood, 2019). It was shown that this negativity bias may decrease with age and that it may be larger for young people compared to adults (Sparks & Ledgerwood, 2019). Longitudinal research also found rumination and worry may eventually result in more symptoms of depression and anxiety with adolescents (Young and Dietrich, 2015). As an additional layer to this problem, research on peer-to-peer support websites warns that this negativity bias may not only leave writers, but also readers and responders, with even more anxiety and stress (Rains & Wright, 2016).

Because of these reasons, balancing between the focus on the negative and the positive aspects of their experiences may be harder for young people compared to adults. Research on writing and its relation to emotions concludes that expressing negative emotions verbally or in a written form is important, but in contrast, overly focusing on negative emotions may result in negative effects (Rains & Keating, 2015). It may increase negative emotions in the short term and does not come with adequate solutions to a problem (Choi & Toma, 2014; Pennebaker & Seagal, 1999; Rimé et al., 2019; Wright & Chung, 2001). For example, research on expressive writing with adolescents showed that those who overly focused on the negative within their personal narrative, internalized problems more and experienced higher negative mood after the writing intervention (Fivush et al. 2007).

Due to the beforementioned difficulties, studies on expressive writing with young people suggest they may need additional help with their writing to strengthen the positive effects and temper the negative effects of expressive writing (Facchin et al., 2014; Travagin et al., 2015). It was suggested that a standard expressive writing intervention, mainly focused on the expression of emotions and thoughts, may not be the most effective for adolescents (Facchin et al., 2014; Travagin et al., 2015). More research is needed on how writing about a stressful event, such as the COVID-19 pandemic, may relate to young people's emotional reactions towards the

stressful event. Moreover, it is important to find ways to improve young people's reflections upon distressing events on peer-to-peer support websites.

According to the transactional model of stress and coping, emotions and stress in relation to an event result from one's cognitive appraisals of the situation (Lazarus and Folkman, 1984). If the individual believes that a situation has a significant negative impact on one's well-being (primary appraisal) and does not believe to be able to cope with the specific stressor (secondary appraisal), the situation will have a negative effect on one's emotions and stress level (Greenaway et al., 2015; Ben-Zur, 2019). One can expect that it may be better to help young people to reappraise a stressful event by focusing on the positive aspects and consequences of the stressful situation. Expressive writing theory, i.e., a psychotherapeutic writing intervention on one's deepest emotions and thoughts, has already proven to help to reflect more effectively on negative experiences which results in positive effects on people's wellbeing (Frattaroli, 2006).

In the current studies we theorize that expressive writing instructions on peer-to-peer support websites could possibly help young people to reflect more effectively on their negative experiences, change their cognitive appraisals and, consequently, their emotional reactions in relation to a negative experience. We conducted two online experiments, one in the Spring of 2020 and the second in the Winter of 2020, in which we compared the effectiveness of different expressive writing instructions. In the first study we compared a standard expressive writing instruction (writing about one's emotions and thoughts in relation to the lockdown and one's coping strategies) with a positive writing instruction (writing about the positive aspects of the lockdown) and a coping writing instruction (writing about previous experiences and how these are helpful to cope with the lockdown). In the second study we compared a neutral writing instruction (writing about one's opinion in relation to the corona measures) with a positive writing instruction (writing about the positive aspects of the COVID-19 pandemic) and a coping writing instruction (writing about what helps to deal with the difficulties experienced as a result of the COVID-19 pandemic).' By means of pre- and post-tests we measured the change in emotions and coping self-efficacy.

This research is one of the first to apply the transactional model of stress and coping and expressive writing theory to the context of online support seeking. Combining these theories may help to explain under which circumstances writing about a stressful event, in this case the COVID-19 pandemic, in a social support context affects young people's emotional reactions towards the situation. This study can help to design online interventions to provide social support and emotional relief to young people.

Literature review

Changing emotional reactions to a stressful event: Cognitive appraisals and expressive writing instructions

According to the transactional model of stress and coping (Lazarus and Folkman, 1984) emotions in relation to a situation result from one's cognitive appraisals of the situation (Greenaway et al., 2015; Ben-Zur, 2019). A primary appraisal reflects whether or not the individual believes that the event has a significant impact on their well-being (Greenaway et al., 2015; Ben-Zur, 2019). Some may perceive an event to be a threat to their wellbeing (threat appraisal), while others may find challenges that have a positive effect on their well-being (challenge appraisal), at the present moment or in the future. A secondary appraisal occurs when someone believes to be able to cope with the specific stressor or not (Greenaway et al., 2015; Ben-Zur, 2019). In turn, coping with a stressful event is viewed as a continuing process reappraisal of the situation and the available coping resources (Skinner and Zimmer Gembeck, 2016).

One promising way to change one's appraisals of a stressful situation is an expressive writing instruction. It can be defined as "an individually focused intervention designed to improve emotional expression and processing during adaptation to stressful situations and, as a consequence, improve psychological and physical health" (Pennebaker, 2004; Travagin et al., 2015, p. 43). A standard expressive writing instruction implies that someone writes about his/her deepest thoughts and emotions, which allows to reorganize thoughts and gain new insight (Pennebaker and Seagal, 1999). It was found to come with positive outcomes on well-being, such as enhanced mood, lowered depressive symptoms and anxiety and even better physical health (Frattaroli, 2006).

Multiple studies have tried to examine under which circumstances expressive writing is most beneficial, including the content of the narrative that is written (e.g., Frattaroli, 2006). For example, early research on expressive writing theory found that the use of cognitive words (e.g., think, believe, realize) had the most promising effects (Smyth, 1998; Pennebaker and Seagal, 1999; Burton and King, 2004; Pennebaker, 1999; Graci et al., 2018). More recent research found that higher narrative coherence and structure was important too (Graci et al., 2018).

Although the primary purpose of sharing a personal narrative about a stressful situation on a peer-to-peer support website is to receive advice and emotional support from others, writing a personal narrative on these websites also lends young people the opportunity to deeply reflect on their experiences. Expressive writing theory therefore seems to be an interesting theory to apply within the context of peer-to-peer support websites. One study found that the writing of personal narratives on peer-to-peer support websites was a motivation for use itself and an important factor in sustained use of these websites (Ma et al., 2017). The authors therefore suggest to take the effects of expressive writing into account when designing an online social support platform (Ma et al., 2017).

Combining the transactional model of stress and coping and expressive writing theory, we may expect that if we can change the way young people appraise and write about a negative event on peer-to-peer support websites, we may possibly change their psychological reactions to the situation itself. This research will therefore examine whether different expressive writing instructions focused on changing primary and secondary appraisals of a stressful event, in this case the COVID-19 pandemic, may affect young people's emotional reactions to the stressful event in question. This study may therefore test the possible usefulness of these theories for redesigning peer-to-peer support websites for young people.

RQ: Can different expressive writing instructions focused on changing primary and secondary appraisals of a stressful event affect young people's emotional reactions to the stressful event in question (e.g., the COVID-19 pandemic)?

Expressive writing theory and primary appraisal: Improving one's positive feelings in relation to the stressful event by focusing on the benefits

According to appraisal theory, the first step to changing one's emotional reaction to a stressful situation is to learn to perceive the situation as an opportunity to one's well-being (Greenaway et al., 2015; Ben-Zur, 2019). Since young people may have the tendency to focus on the negative aspects (e.g., Duprez et al., 2015), it may be important to help them to find the positive in their distressing experiences. Based on expressive writing theory we can assume that helping young people to explicitly reflect on the positive aspects of an experience may help to reappraise the stressor.

Positive reappraisal of a distressing experience by young people was shown to be an effective strategy (Ng et al., 2018). Ng et al. (2018) say that "it involves finding positive meaning in stressful life events. When confronted with stressful and challenging life experiences, accepting one's negative emotions and trying to seek out positives may be an optimal strategy for fostering subjective well-being" (p. 23). Writing about benefits is understood to "restructure previous maladaptive cognitive schemas and perspectives" (Facchin et al., 2014, p. 133). In other words, it may be an effective strategy to reappraise a stressful event. It was evidenced by earlier research that positive emotions and maintaining a positive perspective on stressful events in general can be considered and effective coping strategy (Folkman, 2008). The author, in this perspective, specifically referred to benefit finding and reminding, and positive reappraisal of stressful events (Folkman, 2008).

In the literature on expressive writing theory, researchers have been experimenting with different types of writing instructions focused on positive emotions, aspects and benefits. However, the effects of writing about the positive is not often studied with young adults and adolescents. Two studies on writing with young adults have shown writing about benefits may be more effective than a standard expressive writing instruction (i.e., writing on thoughts and emotions) (McCullough et al., 2006; Lichtenthal and Cruess, 2010). One research with adolescents showed that a task of writing about the positive aspects of a stressful situation positively impacted their self-concept compared to a standard expressive writing and neutral writing instruction (Facchin et al., 2014).

Previous positive writing instructions in the literature on expressive writing have mainly focused on writing exclusively about positive experiences related to a distressing event (e.g., Crawford et al., 2017; Facchin et al. 2014; Lichtenthal and Cruess, 2010; McCullough et al., 2006) or writing about a positive event (Baikie et al., 2012; Burton & King, 2004). However, a balance between the positive and the negative may be more essential.

A study on narrative meaning making found that positive processing, characterized by a primarily positive valence (i.e., primarily positive-emotion) of the narrative and reflection of meaning making of the events, was associated with lower anxiety. On the contrary, negative processing, characterized by a primarily negative valence of the narrative and negative reflection on the events, resulted in higher perceived stress (Graci et al., 2018). So called 'integrative meaning-making', reflected in writing about both positive and negative emotions and aspects related to the situation and oneself, was associated with the best outcomes on anxiety and perceived stress (Graci et al., 2018).

Thus, in this study we aim to examine the effectiveness of a positive writing instruction that asks young people to write both about the negative aspects and the positive aspects of their distressing experience.

Expressive writing theory and secondary appraisal: Positive self-affirmation of one's coping abilities by focussing on previous successful coping strategies

According to appraisal theory, the second step to changing one's psychological reaction to a stressful situation is to believe in one's own coping abilities in relation to the situation. Based on expressive writing theory we can assume that helping young people to reflect on their previous successful coping efforts may help to reappraise their coping self-efficacy.

The idea of self-affirmation suggests that writing may help to affirm one's values and actions, which will influence one's self concept and promote effective coping (Taylor et al., 2016). Previous research on expressive writing theory has hypothesized that writing may help to reflect upon one's coping strategies (e.g., How did I cope

before? How can I cope better?) which in turn may improve one's self-efficacy in coping (Facchin, 2010; Frattaroli, 2006).

For example, a study on expressive writing with preadolescents showed that more positive self-affirmation (e.g., positive personality traits and personal values) resulted in less anxiety over time (Niles et al., 2016). In relation to one's own believes in coping, a study on expressive writing with adolescent girls showed that the participants described more adaptive and less maladaptive coping strategies after 3 sessions of writing about a personal problem (Vashchenko et al., 2007).

Based on literature on self-effects on social media, we may expect that positive self-affirmation in a personal narrative about a distressing event may lead to positive self-persuasion (Stavrositu & Kim, 2018; Valkenburg, 2017). For example, one study on self-persuasion in a mobile health application, showed that self-generated persuasive messages in relation to healthy behavior (in the form of pro-attitudinal arguments written by the self) enhanced self-efficacy more than other-generated persuasive messages. Self-efficacy, in turn, influenced participants' actual behavior in relation to the healthy behaviors (Stavrositu & Kim, 2018). Based on this concept of self-effects, we may expect that a positive self-affirmation about one's coping strategies may cause young people to generally feel more confident in setting the right coping behaviors.

Based on the transactional model of stress and coping we expect that a positive affirmation of one's coping abilities may positively influence how someone feels in relation to a negative event. However, the previous study (Vashchenko et al., 2007) did not confirm that asking people to write about coping strategies resulted in higher emotional wellbeing. In this study we will therefore examine how writing on the effectiveness of one's coping strategies may explain the effects of a coping writing exercise on feelings in relation to a negative event.

Study 1

Hypotheses

Based on the beforementioned literature review, we hypothesize in study 1 that a positive writing instruction (i.e., writing about the emotions and thoughts related to a negative event and the positive consequences the event) may result in a higher positive change in feelings in relation to the lockdown due to the COVID-19 pandemic compared to a standard expressive writing condition (i.e., writing solely about one's thoughts and emotions in relation to a stressful event). Furthermore, we hypothesize that writing relatively more about the positive aspects and consequences than the negative aspects and consequences will mediate the positive relation between the positive writing instruction and a positive change in feelings.

We also hypothesize that a writing instruction focused on coping (i.e., writing about previous experiences and how these are helpful to cope with the lockdown) may result in a higher positive change in feelings in relation to the lockdown due to COVID-19 pandemic after writing compared to a standard expressive writing condition (i.e., writing about one's feelings in relation to a stressful event). Furthermore, we hypothesize that writing relatively more about the effectiveness of one's coping strategies may mediate the positive effect of the positive writing instruction on change in feelings.

Giving the instruction to write about positive aspects and previous successful coping efforts may result in writing about relatively more positive feelings too. The use of positive-emotion words was found to moderate the relation between writing about a positive experience and well-being (Burton and King, 2004). Previous research showed that writing about positive emotions more than about negative emotions may have a positive effect on one's emotional well-being over time (Pennebaker and Seagal, 1999). On the contrary, using relatively more negative emotion words may have negative effects over time (e.g., more feelings of anxiety; Niles et al., 2016). We will therefore take the relative number of positive emotions into account as a third mediating variable in our analyses.

H1: A positive writing instruction will result in a higher positive change in feelings in relation to lockdown compared to a standard expressive writing condition.

H2: The relative number of positive aspects and consequences compared to negative aspects and consequences described in the narrative will mediate the relationship between a positive writing instruction and a positive change in feelings.

H3: The relative number of positive emotion words compared to negative emotion words described in the narrative will mediate the relationship between both the positive and coping writing instruction and a positive change in feelings.

H4: A writing instruction on coping will result in a higher positive change in feelings in relation to the lockdown after writing compared to a standard expressive writing instruction (i.e., writing about one's feelings in relation to a stressful event).

H5: The relative effectiveness of one's coping strategies described in the narrative will mediate the relationship between a coping writing instruction and a positive change in feelings.

H6: The relative number of positive emotion words compared to negative emotion words described in the narrative will mediate the relationship between a coping writing instruction and a positive change in feelings.

Methods of study 1

Sample

An online survey in Qualtrics was distributed among Flemish adolescents and young adults between 14 and 25 years old. The survey was distributed within the personal network of the researchers and posted on de webpages of two Flemish peer-to-

peer support websites for adolescents and young adults. The sampling procedure resulted in a sample of 156 participants. The mean age of the participants was 20,19 (SD = 3,115). About 86% of all participants were female.

Procedure

Participants were asked to write about their experiences with the lockdown due to the COVID-19 pandemic. The study took place during the Belgian lockdown (approximately from the 14th of March to the fourth of May 2020), during which schools, cafés and restaurants were closed, organized sports and leisure activities were prohibited and social contacts were restricted to a maximum of four close contacts per household. In accordance with European legislation (FRA European union agency for fundamental rights, 2014) the ethical research committee of the University of Antwerp granted permission to collect data from adolescents aged 14 years or older without parental consent.

Research on expressive writing often asks participants to write about a personal recent or past difficult emotional experience, which results in a wide variety of narratives, both in context, content and emotionality (Travagin et al., 2015). Meta-analysis has shown that an expressive writing intervention is more effective when it concerns recent or "undisclosed" events which are still being emotionally processed by the writers (Frattaroli, 2006). Moreover, writing about a very specific topic was also found to come with generally more positive effect (Reinholds et al., 2017). In this research, participants needed to write about the same distressing situation which was a specific, current and undisclosed event. This allowed to keep the variances in the narratives to a minimum.

In a similar study on expressive writing, participants were asked to write on their experiences for 10 min or more (Green et al., 2017). Considering the online and voluntary nature of young people's participation in this study, we preferred not to ask participants to write for 10 min or more, but instead, participants were asked to write at least 10 sentences in order to make sure that they wrote a narrative. Participants wrote on average 27,753 words (SD = 113.49 words). Only participants who wrote narratives counting 150 words (i.e., 10 sentences with an average number of 15 words) or more were taken into account. This resulted in a sample of 156 participants and narratives.

Materials

Two experimental expressive writing instructions were compared to a standard expressive writing instruction. The three conditions are shown below. In the first condition, which we will refer to as the "standard writing instruction," a standard expressive writing instruction was presented. This instruction was adapted from Facchin et al. (2014) and translated into Dutch. Participants were asked to write about how they experienced the lockdown during the COVID-19 pandemic, which emotions they felt, what their thoughts were and how they tried to deal with these emotions and thoughts. Since previous research already proved expressive writing instructions to be beneficial to writers' well-being, this research mainly had the purpose to study the effect of adapted expressive writing instructions (positive or coping instruction) on change in emotions and the mediating effect of the specific content of writing.

In the second or "positive writing instruction" the participants were also asked to write about how they experienced the lockdown during the COVID-19 pandemic, which emotions they felt, what their thoughts were and how they tried to deal with these emotions and thoughts. Above that, they were explicitly asked to focus on the positive aspects of the lockdown and which advantages it may have for them now and in the future. This condition was adapted from previous research on benefit-focused writing with adolescents (Facchin et al., 2014). This writing instruction significantly differs from previous positive writing instructions that asked participants to write only about the positive aspects of distressing experiences (e.g., Facchin et al. 2014; Lichtenthal & Cruess, 2010; McCullough et al., 2006) or write exclusively about positive experiences (Baikie et al., 2012; Burton & King, 2004), by asking participants explicitly to write both about the emotions and thoughts related to the distressing experience and positive aspects related to the same experience.

In the third condition or "coping writing instruction" the participants were also presented a standard expressive writing instruction. Above that, they were asked to focus on previous experiences and how they may have taught them something that helps them to cope with the lockdown.

Before and after writing the participants needed to fill out questions on their emotions in relation to the lockdown to measure the change in feelings due to the

writing instruction. Previous research on expressive writing found that writers may experience significant fewer positive emotions and more negative emotions after the writing instruction (Pennebaker & Seagal, 1999). In this study, we did not want to measure young people's general mood, but rather their feelings in relation to the stressful situation.

Standard writing instruction: Write at least 10 sentences on how you experience the lockdown due to the coronavirus (How do you feel about it? What are your thoughts? How do you deal with these thoughts and emotions?). *(Extra instruction for the experimental conditions is inserted here). It is very important that you write about your deepest feelings and thoughts. Take your time. Don't worry about grammar and spelling. This story will remain confidential and will only be used for the purposes of this research.*

Positive writing instruction: *(. . .) Concentrate on the positive aspects (Which advantages does this situation have for you? Which advantages may it have in the future?). (. . .)*

Coping writing instruction: *(. . .) Concentrate on previous experiences and how they may have taught you something that is helpful to cope with this situation (What happened? How did you cope with thoughts and emotions? And how do these experiences help you now?). (. . .)*

Measures

Change in feelings in relation to the lockdown

A pre- and post-measure of positive and negative emotions in relation to the lockdown were assessed by means of a PANAS emotion scale. A comparable measurement was used in other research on expressive writing instructions (e.g., Green et al., 2017). The scale was introduced using the following sentence "What feelings do you currently experience regarding the lockdown due to the coronavirus?". Participants needed to score 8 positive and 9 negative emotions on a scale from 1 (not at all) to 7 (extremely). The scales showed good reliability

for both the pre-measure (α = 0.85) and post-measure of feelings (α = 0.85). The difference between feelings before and after writing was calculated and used as the dependent variable in part 1 and 3 of the analyses.

Relative number of positive emotions, positive aspects and effectiveness of one's coping strategies

By means of a quantitative content analysis, we calculated the number of positive and negative emotions, positive and negative aspects of the lockdown and statements about the effectiveness and ineffectiveness of coping strategies participants wrote in their narratives. To identify coping strategies, we based our content analysis on the items in the brief COPE (Carver, 1997). Examples of the codes used for this quantitative analysis are listed in the Supplementary Material. Subsequently these scores were used to calculate three variables: the relative number of positive emotions, the relative number of positive aspects and relative effectiveness of coping strategies (e.g., number of positive emotions/number of negative emotions). These scores were coded on a scale from 1 to 10. Quantitative content analysis showed that young people experienced most difficulties with regard to the lack of social contact and support, homeschooling, missing out on experiences, and conflicts at home. Positive reframing, social contact, physical activity, and distraction were the most mentioned coping strategies. Examples on coding can be found in annex (Annex 1).

Data Analysis

First, we conducted a quantitative content analysis on the narratives emerging from the writing instructions (see Supplementary Material). This analysis was used to construct three relative content variables (see measures). Secondly, we used IBM SPSS Statistics Version 25 for all three parts of the quantitative analysis. In the first part of the quantitative analyses, we tested hypothesis 1 and 3 by means of an ANOVA analysis. In the second part of the analyses, we tested hypotheses 2 and 4 by means of mediation analysis in PROCESS (version 3.4.1) based on techniques developed by Hayes (2013). A mediation analysis not only shows how the writing instruction directly influences change in feelings as the dependent variable, but also the indirect effects of the writing instructions as a result of the precise contents of writing that affect change in feelings. Therefore, our dependent variables are constructed as follows: positive or coping writing condition (1) and standard writing

condition (0). Age was taken into account as a covariate in all analyses because of the understanding that emotional and cognitive resources to reflect effectively upon a distressing event may vary between young adolescence and young adulthood, which in turn may change the effectiveness of the writing instruction (Travagin et al., 2015; Taylor et al., 2016). Gender was not taken into account as a covariate, due to an uneven division between male and female participants.

Results of study 1

Manipulation check

By means of a one-way multivariate analysis of variance (MANOVA), we first conducted a manipulation check for the experimental writing conditions. Pairwise comparisons between the three writing conditions revealed that narratives written in a positive writing condition scored higher on relative positive aspects than narratives written in the standard expressive writing condition (MD = 1.62, SD = 0.38, $p < 0.001$) and the coping writing condition (MD = 1.25, SD = 0.38, $p < 0.010$). Narratives written in the coping condition scored higher on previous experiences and coping efforts than narratives written in the standard condition (MD = 1.60, SD = 0.29, $p < 0.001$) and positive condition (MD = 1.47, SD = 0.31, $p < 0.001$). These differences confirm that the manipulations for the positive and the coping condition have worked.

Analyses part 1: Investigating the difference in change in feelings

To test hypotheses 1 and 4 we conducted an ANOVA analysis to measure the difference for change in feelings between the three writing instructions. Change in feelings was taken into account as the dependent variable. The conditions were included as a fixed factor (i.e., positive, coping and standard) and age as a covariate.

The mean score of feelings in relation to the lockdown before writing was 3.92 on a scale from 1 to 7 (SD = 0.85), reflecting that the situation was experienced as moderately stressful. The analysis found a significant difference for change in feelings between the three writing conditions [$F = (2,153)$ 4.33, $p < 0.050$]. More precisely, the positive writing condition resulted in a higher positive change in feelings compared to the standard expressive writing condition (0.21, SD = 0.07, $p < 0.010$). Hypothesis 1 is therefore accepted. There was no statistically significant

difference between the coping writing condition and the standard expressive writing condition (0.073, SD = 0.68, p = 0.29). Hypothesis 4 is therefore rejected. Age did not show a significant relation to change in feelings [F = (2,153) 1.66, p = 0.20].

Analyses part 2: Mediation analysis of the conditions and their contents

To test hypotheses 2, 3, 5 and 6, we used the macro PROCESS to estimate conditional indirect effects (Model 4–5,000 bootstrap intervals–BC 95% confidence intervals). Two mediation models were tested. The conditions (i.e., positive vs. standard and coping vs. standard writing condition) were taken into account as independent variables. Change in feelings was included as the dependent variable. Relative number of positive emotion words, relative number of positive aspects and relative effectiveness of coping were taken into account as mediating variables. The standardized results of these models can be viewed in Figure 2 and Figure 3.

A mediation model with the positive writing condition as the independent variable (positive writing condition = 1; standard writing condition = 0) found that there was a significant positive direct relationship between the positive writing condition and change in feelings (b = 0.546, S.E. = 0.09; BC 95% CI [0.05 to 0.39]). Relative number of positive emotions (b = 0.55, S.E. = 0.25; BC 95% CI [0.206 to 1.195]) and relative number of positive aspects (b = 0.77, S.E. = 0.40; BC 95% CI [0.84 to 2.43]) were significantly higher for the positive writing condition compared to the standard writing condition. Relative effectiveness of coping was not significantly different for the positive writing condition in comparison with the standard writing condition (b = −0.08, S.E. = 0.14; BC 95% CI [−0.34 to 0.22]). Age was not related to the relative content variables, nor to change in feelings. There was no direct relationship between the relative number of positive emotions (b 0.04, S.E. 0.04; BC 95% CI [−0.06 to 0.09]), positive aspects (b = −0.077, S.E. = 0.02; BC 95% CI [−0.06 to 0.03]) or effectiveness of coping (b = −0.04, S.E. = 0.06; BC 95% CI [−0.13 to 0.09]) and change in feelings. Thus, the positive relationship that was found for the positive writing condition and change in feelings was not mediated by either of these relative content variables, and therefore also not by relative number of positive aspects. Hypotheses 2 and 3 are therefore rejected.

A mediation model with the coping writing condition as the independent variable (coping writing condition = 1; standard writing condition = 0) found that there

was no significant relationship between the coping writing condition and change in feelings (b = 0.15, S.E. = 0.07; BC 95% CI [−0.08 to 0.19]). Relative number of positive emotions (b = 0.12, S.E. = 0.20; BC 95% CI [−0.28 to 0.53]), relative number of positive aspects (b = 0.258, S.E. = 0.27; BC 95% CI [−0.18 to 0.91]) and relative effectiveness of coping (b = 0.29, S.E. = 0.03; BC 95% CI [−0.08 to 0.64]) were not significantly different for the coping writing condition in comparison with the standard writing condition. Age was not related to the relative content variables, nor to change in feelings. There was no relationship between the relative number of positive emotions (b = 0.03, S.E. = 0.04; BC 95% CI [−0.07 to 0.09]), positive aspects (b = 0.04, S.E. = 0.03; BC 95% CI [−0.04 to 0.06]) or effectiveness of coping (b = 0.141, S.E. = 0.04; BC 95% CI [−0.02 to 0.13]) and change in feelings. Thus, the content of writing of the coping writing did not mediate the effect on change in feelings. Hypotheses 5 and 6 are therefore rejected.

Figure 2. Mediation model: Positive vs. standard writing instruction

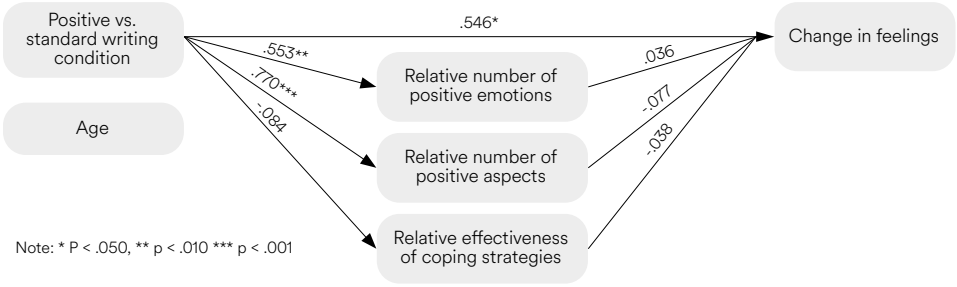
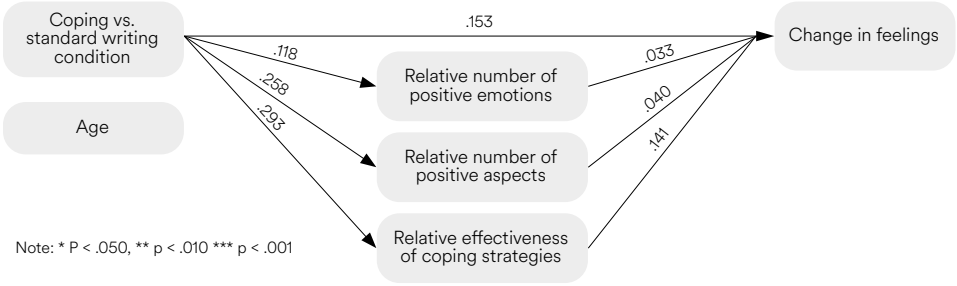


Figure 3. Mediation model: Coping vs. standard writing instruction



Discussion of study 1

In the first study we found that the positive writing instruction was associated with a higher increase in positive feelings compared to the standard writing condition. However, the analysis did not show a mediating effect of the relative content variables. This was not in correspondence with previous research, which suggested that a high number of positive-emotion words and a moderate number of negative emotion words results in a higher positive change in well-being outcomes (Pennebaker and Seagal, 1999). The difference in change in feelings between the writing conditions could therefore not be explained by the content of writing. In other words, the positive writing condition seemed to occur with a relatively higher increase in positive emotions compared to the standard writing condition, regardless of the actual content of writing by the participants. Age did not have a significant effect on the effectiveness of the positive writing instruction, nor the actual content of writing.

We can conclude from study one that instructing young people to write about the positive aspects and consequences of a stressful event could be equally beneficial to both younger adolescents' as young adults' emotional well-being. There may be different explanations to the positive relationship between the positive writing instruction and positive change in emotions and the absence of a mediation effect of the content of writing. First, there may be other mediating variables that we have missed out in this study. Previous research, for example, already found that the use of cognitive words mediated the positive effect of a positive writing instruction compared to a standard expressive writing instruction (McCullough et al., 2006). Secondly, the instruction itself may already have elicited a positive change in emotions. Our society teaches us that optimism—or focusing on the positive—is an effective coping strategy and will always yield more positive results than pessimism - or focusing on the negative. Possibly the instruction itself may have triggered a positive expectation amongst the participants so that the actual content of writing did not make a difference anymore. Finally, the positive change in emotions may not result from writing about the positive aspects of the lockdown, but rather from not writing about the negative aspects of the lockdown. It is possible that trying to come up with positive aspects and consequences, leaves less space to focus on the negative aspects (as well as the negative emotions that result from it) which in turn will buffer against the negative effects of focusing on the negative.

The mediation analysis for the comparison between the coping writing condition and the standard writing condition did not show a difference in change in feelings. Although the manipulation check revealed that there were significant differences in the content of writing for both writing conditions, the content of writing could not explain the absence of a difference in change in feelings. This may be due to the fact that all writing conditions instructed participants to reflect on their coping strategies and that an additional instruction to reflect on previous experiences and how these may help to deal with the lockdown may not have made a difference. Moreover, writing on previous experiences may still have been hard for the youngest in our sample (14–15-year-old adolescents), who generally do not have as much life experience as the oldest in our sample (24–25-year-old young adults). After conducting study one, we concluded that writing about coping strategies in relation to the lockdown would have been an interesting experimental writing condition on itself. We addressed this limitation in study 2.

Study 2

Hypotheses

Due to the non-significant difference between the coping writing instruction and the standard writing instruction, we decided to change the study design and writing instructions of study 1. In the second study of this chapter, the standard writing condition was not taken into account. Instead, two experimental expressive writing instructions, a positive and coping writing instruction, were compared to a neutral writing instruction.

In the positive writing instruction, we did not ask participants to reflect on coping strategies to make the difference between the positive and coping writing instruction more apparent. Apart from that, the positive writing instruction remained exactly the same. In the coping writing instruction participants were not asked to write about previous experiences, but about the successful coping strategies they used in the present moment. In the third or neutral writing instruction the participants were not asked to write about emotions and thoughts concerning the difficulties they experienced, but merely asked to write about their opinion concerning the measures taken by the government (e.g., necessity, helpfulness, effectiveness, etc.).

In study 2 we did not only analyze the change in feelings, but also changes in coping self-efficacy in relation to the COVID-19 pandemic due to the writing instructions. More information on the methods of study 2 can be found in the next section.

For this study we formulate similar hypotheses as in study 1:

H1a/b: A positive writing instruction will result in a) a higher positive change in feelings and b) a higher positive change in coping self-efficacy compared to a neutral writing instruction.

H2a/b: The relative number of positive aspects described in the narrative will mediate the relationship between a positive writing instruction and a) a higher positive change in feelings and b) a higher positive change in coping self-efficacy compared to a neutral writing instruction.

H3a/b: The relative number of positive emotion words compared to negative emotion words described in the narrative will mediate the relationship between a positive writing instruction and a) a positive change in feelings and b) a higher positive change in coping self-efficacy compared to a neutral writing instruction.

H4a/b: A coping writing instruction will result in a) a higher positive change in feelings and b) a higher positive change in coping self-efficacy compared to a neutral writing instruction.

H5a/b: The relative trust in coping described in the narrative will mediate the relationship between a coping writing instruction and a) a higher positive change in feelings and b) a higher positive change in coping self-efficacy compared to a neutral writing instruction.

H6a/b: The relative number of positive emotion words compared to negative emotion words described in the narrative will mediate the relationship between a coping writing instruction and a) a positive change in feelings and b) a higher positive change in coping self-efficacy compared to a neutral writing instruction.

Methods of study 2

Sample

An online survey in Qualtrics was distributed among Flemish adolescents and young adults between 14 and 25 years old. The survey was distributed within the personal network of bachelor students. The sampling procedure resulted in a sample of 177 participants. The mean age of the participants was 18,73 (SD = 2,73). About 49% of all participants were female.

Procedure

The study took place in December of 2020. Schools were open again, but cafés and restaurants were closed, organized sports and leisure activities were limited and social contacts were restricted to a maximum of four close contacts per household.

Similar to study 1, participants were asked to write about their personal experiences with the measures taken by the government in relation to the COVID-19 pandemic. Participants were asked to write at least 10 sentences in order to make sure that they wrote a narrative. Only participants who wrote narratives counting 150 words (i.e., average number of 15 words for 10 sentences) or more were taken into account. This resulted in a sample of 177 participants and narratives. The average word count for these narratives were 252,73 words (SD = 85,55).

Materials: Writing instructions

In study 2, the standard writing condition was not taken into account. Instead, two experimental expressive writing instructions (i.e., positive and coping writing instruction) were compared to a neutral writing instruction. The three conditions are shown below.

The first experimental writing instruction, which we will refer to as the "positive writing instruction," was the same as the positive writing instruction of study 1. Participants were asked to write about how they experienced the COVID-19 pandemic, which emotions they felt, what their thoughts were and how they tried to deal with these emotions and thoughts. In addition, they were explicitly asked to focus on the positive aspects of the lockdown and which advantages it may have for them now and in the future. This writing instruction significantly differs from

previous positive writing instructions that asked participants to write only about the positive aspects of distressing experiences (e.g., Facchin et al. 2014; Lichtenthal and Cruess, 2010; McCullough et al., 2006) or write exclusively about positive experiences (Baikie et al., 2012; Burton & King, 2004), by asking participants explicitly to write both about the emotions and thoughts related to the distressing experience and positive aspects related to the same experience.

In the second experimental condition or "coping writing instruction" the participants were presented a writing instruction similar to the coping writing of study 1. However, in this case they were not asked to write about previous experiences, but about the successful coping strategies they used in the present moment to cope with the difficulties resulting from the COVID-19 pandemic. In the third or neutral condition the participants were not asked to write about emotions and thoughts concerning the difficulties they experienced, but merely asked to write about their opinion concerning the measures taken by the government (e.g., necessity, helpfulness, effectiveness, etc.).

Similar to study 1, participants needed to fill out questions on their emotions in relation to the COVID-19 pandemic before and after writing to measure the change in feelings due to the writing instruction. In addition, participants also needed to fill out questions on their coping self-efficacy in relation to the COVID-19 pandemic before and after writing to measure the change in self-efficacy due to the writing instruction.

Positive writing instruction: Write at least 10 sentences on how you experience the lockdown due to the coronavirus (How do you feel about it? What are your thoughts?). Concentrate on the positive aspects (Which advantages does this situation have for you? Which advantages may it have in the future?). It is very important that you write about your deepest feelings and thoughts. Take your time. Don't worry about grammar and spelling. This story will remain confidential and will only be used for the purposes of this research.

Coping writing instruction: Write at least 10 sentences on how you experience the lockdown due to the coronavirus (How do you feel about it? What are your thoughts?). Concentrate on what helps you deal with the present situation (What helps to south or overcome negative feelings and thoughts?). It is very important that you write about your deepest feelings and thoughts. Take your time. Don't worry about grammar and spelling. This story will remain confidential and will only be used for the purposes of this research.

Neutral writing instruction: Write at least 10 sentences on your opinion concerning the corona measures taken by the government (e.g., necessity, helpfulness, effectiveness, etc.). Take your time. Don't worry about grammar and spelling. This story will remain confidential and will only be used for the purposes of this research.

Measures

Change in feelings in relation to the lockdown

A pre- and post-measure of positive and negative emotions in relation to the lockdown were assessed by means of a PANAS emotion scale. A comparable measurement was used in other research on expressive writing instructions (e.g., Green et al., 2017). The scale was introduced using the following sentence "What feelings do you currently experience regarding the lockdown due to the coronavirus?". Participants needed to score 8 positive and 9 negative emotions on a scale from 1 (not at all) to 7 (extremely). The scales showed good reliability for both the pre-measure (α = 0.832) and post-measure of feelings (α = 0.850). The difference between feelings before and after writing was calculated and used as a dependent variable in part 1 and 3 of the analyses.

Change in coping self-efficacy

The coping self-efficacy scale by Chesney (2006) was used to measure participants self-efficacy in dealing with the difficulties in relation to the measures taken by the government. The scale was introduced using the following sentence "How much trust do you have in yourself for dealing with the difficulties resulting from the corona measures in the current moment?". Participants needed to score 13 items

on a scale from 1 (not at all) to 7 (extremely). The scales showed good reliability for both the pre-measure (α = 0.866) and post-measure of feelings (α = 0.908). The difference between coping self-efficacy before and after writing was calculated and used as a dependent variable in part 1 and 3 of the analyses.

Relative number of positive emotions, positive aspects, trust in one's coping strategies and relative approval of corona measures

By means of a quantitative content analysis, we calculated the number of positive and negative emotions, positive and negative aspects of the lockdown and statements about the effectiveness and ineffectiveness of coping strategies participants wrote in their narratives. To identify coping strategies, we based our content analysis on the items in the brief COPE (Carver, 1997). For study 2, we also coded positive and negative opinions on the corona measures. Examples of the codes used for this quantitative analysis are listed in the Supplementary Material. Subsequently these scores were used to calculate four variables: the relative number of positive emotions, the relative number of positive aspects, relative trust in coping strategies and relative approval of corona measures (e.g., number of positive emotions/ number of negative emotions). These scores were coded on a scale from 1 to 10.

Data analysis

First, we conducted a quantitative content analysis on the narratives emerging from the writing instructions (see Supplementary Material). This analysis was used to construct three relative content variables (see measures). Secondly, we used IBM SPSS Statistics Version 25 for all three parts of the quantitative analysis. In the first part of the quantitative analyses, we tested hypothesis 1 and 3 by means of an MANOVA analysis. In the second part of the analyses, we tested hypotheses 2 and 4 by means of 4 mediation analyses in PROCESS (version 3.4.1) based on techniques developed by Hayes (2013). To compare the positive writing instruction and coping writing instruction with the neutral writing instruction, we constructed two dummy variables (i.e., neutral = 0 and positive/coping = 1). Age and gender were taken into account as a covariate.

Results of study 2

Manipulation check

By means of a one-way multivariate analysis of variance (MANOVA), we first conducted a manipulation check for the experimental writing conditions. Pairwise comparisons between the three writing conditions revealed that narratives written in a positive writing condition scored higher on relative positive aspects than narratives written in the neutral writing condition (MD = 1.48, SD = 0.28, $p < 0.001$) and the coping writing condition (MD = 1.37, SD = 0.28, $p < 0.001$). Narratives written in the coping writing condition scored higher on previous experiences and coping efforts than narratives written in the neutral writing condition (MD = 1.08, SD = 0.26, $p < 0.001$) and positive writing condition (MD = .70, SD = 0.26, $p < 0.010$). These differences confirm that the manipulations for the positive and the coping condition have worked.

Analyses part 1: Investigating the difference in change in feelings and coping self-efficacy

To test hypothesis 1a/b and 4a/b we conducted MANOVA analysis to measure the difference for change in feelings and coping self-efficacy between the three writing instructions. Change in feelings and change in coping self-efficacy were taken into account as the dependent variables. The conditions were included as a fixed factor (i.e., positive, coping and neutral) and age and gender as covariates.

The positive writing condition did not result in a higher positive change in feelings (MD = .001, SD = 0.06, p = .902). Contradicting our expectations, the positive writing condition resulted in a lower positive change in coping self-efficacy compared to the neutral writing condition (MD = -.167, SD = 0.07, p = .050). Hypothesis 1a and 1b are therefore rejected.

Similarly, the coping writing condition did not result in a higher positive change in feelings (MD = .017, SD = 0.06, p = .785) or a higher change in coping self-efficacy compared to the neutral writing condition (MD = -.027, SD = 0.07, p = .711). Hypothesis 3a and 3b are therefore rejected as well.

Analyses part 2: Mediation analysis of the conditions and their contents

To test hypothesis 2a/b, 3a/b, 5a/b and 6a/b we used the macro PROCESS to estimate conditional indirect effects (Model 4–5,000 bootstrap intervals–BC 95% confidence intervals). Four mediation models are tested. The conditions were taken into account as independent variables. Change in feelings and change in coping self-efficacy were included as the dependent variables. Relative number of positive emotion words, relative number of positive aspects, relative effectiveness of coping and relative approval of the corona measures were taken into account as mediating variables. This results in 4 separate mediation models. The standardized results of these models can be viewed in Figure 4 to Figure 7.

Mediation model 1 and 2: Positive vs. neutral writing instruction

Mediation model 1 with the positive writing condition as the independent variable (positive writing condition = 1; neutral writing condition = 0) found that there was a significant negative direct relationship between the positive writing condition and change in coping self-efficacy (b = -0.611, S.E. = 0.09; BC 95% CI [-0.435 to 0.090]). This was already found in the analyses of part 2. Since this contradicts our hypothesis, H1b is rejected.

Mediation model 2 with the positive writing condition as the independent variable (positive writing condition = 1; neutral writing condition = 0) found that there was no significant positive direct relationship between the positive writing condition and change in feelings (b = -0.017, S.E. = 0.08; BC 95% CI [-0.158 to 0.146]). This was already found in the analyses of part 2. H1a is therefore rejected.

Both model 1 and 2 show that relative number of positive aspects was significantly higher for the positive writing condition compared to the neutral writing condition (b = 0.774, S.E. 0.32; BC 95% CI [0.857 to 2.128]). However, there was no direct relationship between the relative number of positive aspects and change in feelings (b = -0.010, S.E. 0.02; BC 95% CI [–0.045 to 0.041]) or change in coping (b = 0.161, S.E. 0.03; BC 95% CI [–0.013 to 0.084]). Thus, the relative number of positive aspects written in the narrative does not mediate the effect on change in feelings or coping. H2a and H2b are therefore rejected.

The relative number of positive emotions (b = 0.465, S.E. 0.24; BC 95% CI [0.136 to 1.078]), relative effectiveness of coping (b = 0.367, S.E. 0.20; BC 95% CI [0.006

to 0.779]) and relative approval of the measures (b = 0.398, S.E. 0.21; BC 95% CI [0.046 to 0.873]) were all higher in the positive writing condition compared to the neutral writing condition, but the variables did not relate to change in feelings or coping. H3a and H3b are therefore rejected.

Figure 4. Model 1: Positive vs. neutral writing instruction with change in feelings as the dependent variable

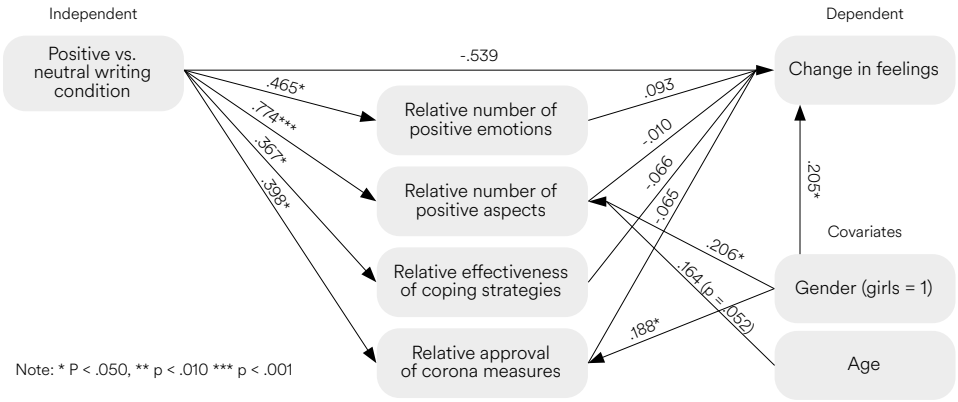
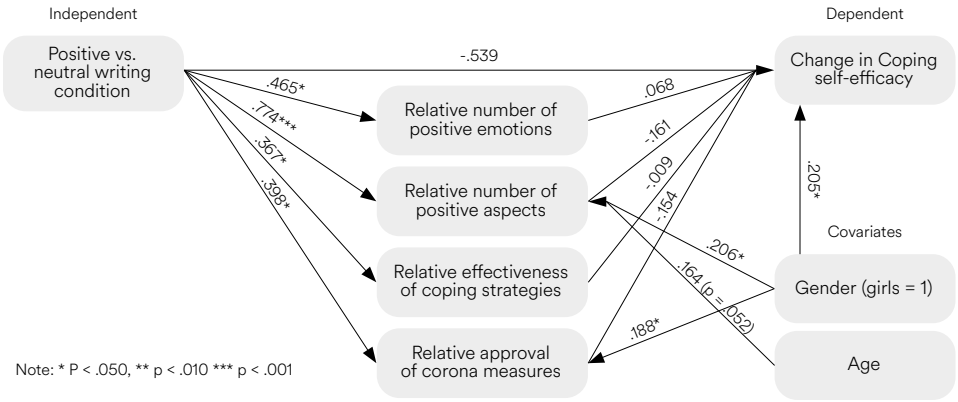


Figure 5. Model 2: Positive vs. neutral writing instruction with change in coping self-efficacy as the dependent variable



Girls seemed to write relatively more positive aspects (b = 0.206, S.E. 0.32; BC 95% CI [0.154 to 1.426]) and expressed relatively higher approval of the measures (b = 0.188, S.E. 0.21; BC 95% CI [0.018 to 0.846]) compared to boys. Girls also seemed to experience a higher positive change in feelings in general compared to boys (b = 0.205, S.E. 0.07; BC 95% CI [0.009 to 0.292]). Although this finding was not significant, older participants seemed to express relatively more positive aspects as well (b = 0.64, S.E. 0.06; BC 95% CI [-0.001 to 0.228].

Mediation model 3 and 4: Coping vs. neutral writing instruction

Mediation model 3 with the coping writing condition as the independent variable (coping writing condition = 1; neutral writing condition = 0) found that there was no significant direct relationship between the positive writing condition and change in emotions (b = 0.012, S.E. = 0.06; BC 95% CI [-0.108 to 0.115]). This was already found in the analyses of part 2. H4a is rejected.

Mediation model 4 with the coping writing condition as the independent variable (coping writing condition = 1; neutral writing condition = 0) found that there was no significant positive direct relationship between the coping writing condition and change in coping (b = -0.152, S.E. = 0.07; BC 95% CI [-0.202 to 0.091]). This was already found in the analyses of part 2. H4b is therefore rejected.

Both model 3 and 4 show that participants express significantly more relative effectiveness of coping in the coping writing condition compared to the neutral writing condition (b = 0.721, S.E. 0.26; BC 95% CI [0.561 to 1.564]). However, there was no direct relationship between the expression of relative effectiveness of coping and change in feelings (b = -0.012, S.E. 0.02; BC 95% CI [−0.050 to 0.026]) or change in coping (b = 0.011, S.E. 0.03; BC 95% CI [−0.047 to 0.052]). Thus, the expression of relative effectiveness of coping written in the narrative does not mediate the effect on change in feelings or coping. H5a and H5b are therefore rejected.

Interestingly, we did see some other significant results. The relative number of positive aspects (b = 0.192, S.E. 0.04; BC 95% CI [0.000 to .155]) and relative approval of the measures (b = 0.242, S.E. 0.3; BC 95% CI [0.015 to 0.117]) had a

significant positive effect on a change in feelings. The relative number of positive aspects (b = 0.221, S.E. 0.05; BC 95% CI [0.014 to .218]) also had a significant positive effect on a change in coping.

Both model 3 and 4 show that girls expressed significantly less positive aspects in their narratives than boys in this sample (b = -0.217, S.E. 0.13; BC 95% CI [-0.554 to -0.046]). There were no age differences found.

Figure 6. Coping vs. neutral writing instruction with change in feelings as the dependent variable

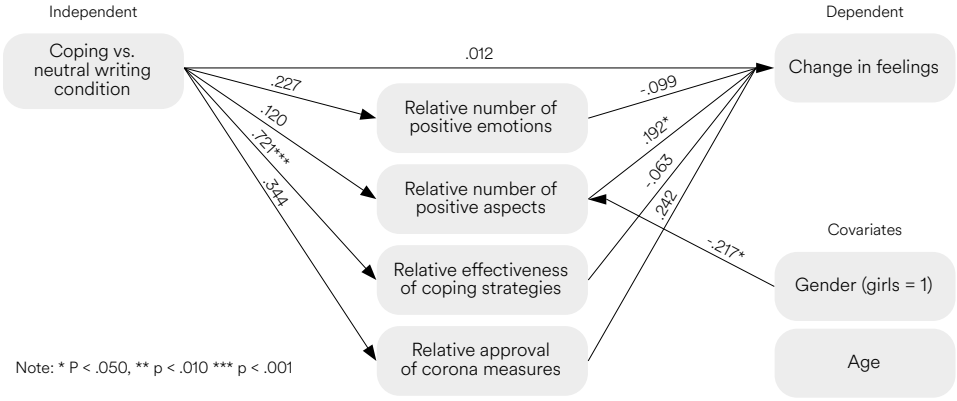
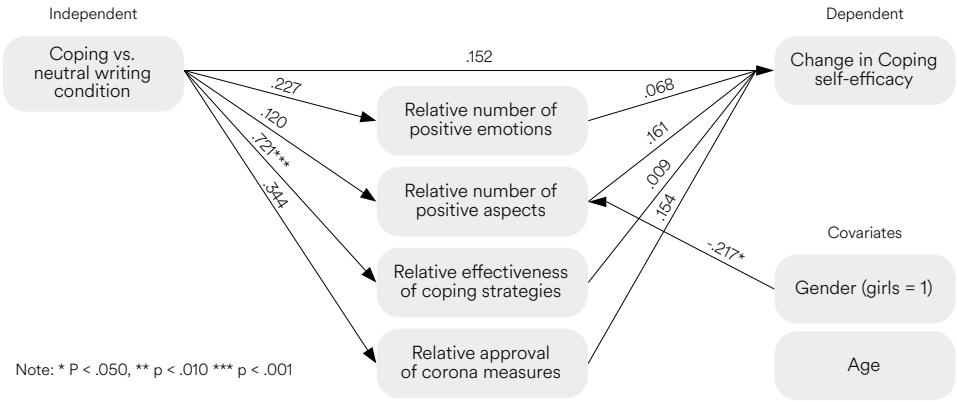


Figure 7. Model 4: Positive vs. neutral writing instruction with change in coping self-efficacy as the dependent variable



Discussion of study 2

Study 2 shows interesting results that, at first sight, seem to contradict the results found in study 1. In the first study, the positive writing instruction had a positive effect on change in feelings, whereas in the second study, the same writing instruction had no effect on change in feelings and a negative effect on change in coping. In other words, the positive writing instruction itself seemed to elicit a negative effect on change in coping compared to the neutral writing condition. In both cases, these effects were not mediated by the content variables. The coping writing instruction did not directly relate to a change in feelings or coping compared to the neutral writing instruction. This effect was also not mediated by expressing relatively higher effectiveness of one's coping strategies. However, writing relatively more positive aspects about the COVID-19 pandemic and expressing relatively more approval of the corona measures seemed to have a positive effect on changes in emotions and/or coping.

How do we interpret these results? It is possible that young people experienced the COVID-19 pandemic differently in the Spring season compared to the Winter season of 2020. Both the news stories that were written about the topic and the content of the stories that the young people wrote, show that young people had a much harder time during the Winter season. During our first study in Spring 2020 nobody knew how long the situation would last. Despite the drawbacks, participants seemed generally hopeful that the situation would be over soon. Self-affirmation about those positive aspects and consequences may therefore have resulted in more positive feelings after writing. The stories of the second study, on the other hand, were less hopeful. Young people experienced a lot of disappointment and demotivation. More and more, young people realized how many important experiences they were missing. The situation was described more often as hopeless. It became more difficult for young people to continue to see the positive aspects. Participants who found it difficult to come up with positive aspects to the COVID-19 pandemic may have been triggered or convinced by the idea that they were not very good at dealing with the difficulties they experienced. As a result, the encouragement to focus on the positive may have backfired for these participants. The risk of causing a backfiring effect had already been evidenced by previous research examining the effects of a positive writing instruction to a standard writing instruction (Baikie et al., 2012).

Despite this negative effect, our results do show that writing about positive aspects can be effective to one's emotional reactions and coping self-efficacy in relation to a negative event. Our results show that those participants who were not asked to write about positive aspects but did so on the basis of their own beliefs, experienced more positive emotions and more confidence in their ability to cope with difficulties relating to the COVID-19 pandemic.

In relation to the first study, we could not control for gender differences due to an uneven division in male and female participants. Therefore, we ensured in our second study an even division in gender and a more representative sample. The results of the second study confirm that there may be gender differences for writing about personal experiences. Girls seemed to write relatively more about positive aspects and expressed relatively higher approval of the measures compared to boys when they were presented with the positive writing instruction.

When girls were presented with the coping writing instruction, they expressed significantly fewer positive aspects in their narratives than boys in this sample. There were no age differences found.

General discussion of chapter 2

Practical implications

On the basis of this study, we recommend to encourage young writers on peer-to-peer support websites to focus more on the positive aspects and consequences of a stressful event. Designers of peer-to-peer support websites could do so by implementing writing instructions on peer-to-peer support websites that can possibly help young people to reflect more effectively on their negative experiences, change their cognitive appraisals and, consequently, their emotional reactions in relation to a negative experience. Expressive writing instructions as were used in these studies may be a good starting point.

Apart from writing instructions another possibility is to present users with a prompt after they have written their personal narrative. For example, before posting their personal narrative on the website, a pop-up message may stimulate writers to revise their personal narrative. For example: "It might be helpful to not only reflect on the

negative, but also on the positive. Are there positive aspects and consequences to the situation that you did not think of before? If so, you can still add these to your narrative if you want." Similarly, previous research on an expressive writing intervention in an online context showed that when additional video feedback about the importance of writing about positive emotions was showed after the writing task, users described more positive emotions in their following writings (Owen, Hanson, & Bantum, 2011).

However, it is important to note that, although our results show that reflecting on the positive sides of a negative experience may be more effective to young people's well-being, it is important not to force positivity and therefore cause a backfiring effect. Peer-to-peer support websites still need to stay a space on which young people can share the negative without too many restrictions. Writing instructions or interface adaptations should therefore always serve the purpose of stimulating, rather than restricting young people's personal emotional expressions. We argue that it may be more interesting to stimulate young users of peer-to-peer support websites in a less directive and more subtle way to focus on the positive by using clever interface design adaptations.

Limitations and further research

These studies have some limitations that need further clarification. Research on expressive writing often includes a follow-up measure of the dependent variable days or weeks after the initial study to measure whether the effects of the writing instruction last in the long term. Because of the anonymous and online nature of these studies, we could not include a follow-up measure. Concerning the length of the corona pandemic, it would have been interesting to set up a longitudinal research approach to substantiate our assumptions on young people's changing experiences with the corona pandemic.

The expressive writing instructions used in these studies were adapted and translated to Dutch from previous research on expressive writing with young people. The language that is generally used in these writing instructions resembles the language that would be used in a therapeutic setting. One can argue whether this type of language is actually suited for young people. Although the instructions were carefully translated with the specific target audience in mind, the possibility

that reading comprehensibility was compromised and has influenced the results of these studies is not excluded. Further research should test for reading comprehensibility with the target audience, especially in case of children and adolescents of all school levels.

The writing instructions presented in these studies were not tested within the controlled environment of a peer-to-peer support website. Therefore, we can only make assumptions about the applicability of these writing instructions in this context. For example, it is not yet certain why exactly the positive writing instruction caused a backfiring effect in the second study and whether this effect would still stand in the context of peer-to-peer support websites.

We did not include a measure of young people's experiences with the writing instructions across the two studies. It is possible that young people experienced the COVID-19 pandemic differently in the Spring season compared to the Winter season of 2020. Generally, the narratives that were written reflected more hope in the Spring season and more demotivation in the Winter season. This may have affected how young people experienced the writing instructions and may in part explain differential effects. A measure of young people's subjective experience with the writing instructions could therefore have provided more insight into the effects that we found. A previous review on school-based expressive writing interventions for adolescents advised to explore adolescents' subjective experience about the expressive writing intervention (Doucet et al., 2018). Further research could take this measure into account.

In these studies, we controlled for demographic and personality differences. However, there may be more personality differences that influence the effects of writing about distressing experiences. For example, research showed that people scoring higher in neuroticism and avoidance of negative emotions benefit the most of expressive writing (Sabo Mordechay et al., 2019).

On the basis of the results and limitations of these studies, we can make recommendations for further research. Studies should examine the effects of similar writing instructions and interface adaptation as well as the acceptability of these features using an existing or fictitious peer-to-peer support website for

young people. Examples on these kind of study designs can be found in literature on communication studies (e.g., Kim and Shyam Sundar, 2014; Kim and Sundar, 2015; Kim et al., 2018) and psychology (O'Leary et al., 2018; Andalibi and Flood, 2021; Smith et al., 2021). We further advise to take more personality differences into account.

Conclusion

Starting from the transactional model of stress and coping and expressive writing theory, this research aimed to investigate whether writing instructions focused on changing young people's appraisals of a stressful situation may affect their emotional reactions and coping self-efficacy in relation to the situation at hand. More specifically, we conducted two online experiments in which participants were presented with different writing instructions to write about their experience with the corona measures taken by the government due to the COVID-19 pandemic (one in the early spring of 2020, the other in winter of 2020).

We concluded from both studies that writing instructions supporting users in writing their personal narrative indeed affect not only what young people write, but also affect their emotional responses and coping self-efficacy in relation to the events that are described. In line with previous research, we found specifically that writing about the positive aspects may be beneficial. We could not find the same support for writing about successful coping strategies.

These studies also make an important theoretical contribution to the literature on expressive writing theory. Previous positive writing instructions in literature on expressive writing have mainly focused on writing exclusively about positive experiences related to a distressing event (e.g., Crawford et al., 2017; Facchin et al. 2014; Lichtenthal and Cruess, 2010; McCullough et al., 2006) or writing about a positive event (Baikie et al., 2012; Burton & King, 2004). However, according to research (Graci et al., 2018), a balance between the positive and the negative may be more essential. Thus, in this study we examined the effectiveness of a positive writing instruction that asks young people to write both about emotions, thoughts, negative aspects and the positive aspects of their distressing experience. We found that this writing instruction can have positive effects on young people's emotions in relation to a negative event. However, it is important to be cautious for possible backfiring effects.

CHAPTER 3

I CAN(NOT) COPE WITH THIS:

Positive vs. negative personal narratives and readers' emotions and coping self-efficacy

Abstract

Based on narrative persuasion theory, reading personal narratives of others on peer-to-peer support websites may help readers to feel better about and become more confident in coping with a stressful situation. However, a negativity bias on peer-to-peer support websites may also leave readers with more anxiety about the problems they experience. By using an online experiment with young adults (18-25 years old) this study predicted and tested whether a personal narrative showing a protagonist with high vs. low coping self-efficacy may influence young readers' emotional responses and coping self-efficacy about a stressful event, i.e., the COVID-19 pandemic. In addition, the moderating effects of identification and similarity were analyzed. The results indicated that reading the high coping self-efficacy narrative resulted in a higher increase in positive feelings than reading the low coping self-efficacy narrative. Moderation analysis indicated that similarity with the protagonist strengthened the positive effects found on coping self-efficacy.

Introduction

Reading personal narratives of others on peer-to-peer support websites may have the potential to provide young people with informational and emotional support to feel better about and become more confident in coping with a stressful situation (Rains et al., 2015; Rains & Young, 2009). However, research also warns that a negativity bias within the personal narratives that are exchanged and consulted on these websites may leave readers with more anxiety about the problems they experience (Rains & Wright, 2016). The positive or negative effect on readers may depend on the content of the personal narratives and how readers relate to these narratives. This study investigates whether a written narrative in which the protagonist shows confidence in coping with a stressful event (i.e., high coping self-efficacy) may have the potential to positively affect readers' emotions and coping self-efficacy. In addition, we analyze the moderating effect of several narrative persuasion processes, such as identification, transportation, self-referencing, and similarity. In this study, we will explain why narrative persuasion theory and accompanying moderators contribute to the study of personal narratives on peer-to-peer support websites more specifically. This study can help to design online interventions using personal narratives to provide peer-to-peer support and emotional relief to young people in times of stress.

Literature review

Narrative persuasion and personal narratives on peer-to-peer support websites

Social Cognitive Theory by Bandura (2001) assumes that people can learn from exemplary figures in their environment to increase their self-efficacy concerning a certain behavior. Bandura refers to this by explaining that 'vicarious experiences' by others can form an important source of information (Bandura, 1978). Based on Social Cognitive Theory, research on narrative persuasion found that narratives, both real and fictional, can have significant effects on beliefs, attitudes, self-efficacy, intention for action, and the actual behavior of recipients (Braddock & Dillard, 2016; Perrier & Martin-Ginis, 2018). Narratives have therefore been used in a health-related context to promote healthy physical and mental habits and behaviors (De Graaf et al., 2016; Perrier & Martin-Ginis, 2018).

Although narrative persuasion is often studied for the purpose of health interventions, in which narratives are deliberately constructed to persuade recipients, we argue that the same principles may also apply for more spontaneously written personal narratives as can be found on, for example, social media and peer-to-peer support websites. In a personal narrative, as we define it in this study, someone describes a distressing experience from a first-person perspective, explaining what they went through, how they ended up in this situation, and what they did to deal with the situation, sometimes followed by a question for the reader to receive a peer-to-peer support response.

However, narrative persuasion theories have not often been applied to such spontaneously written personal narratives. For example, we found only one study describing that, apart from shorter posts about people's emotions and thoughts, some users on Instagram also disclosed personal narratives in which they described in more width and depth what they thought, felt, and went through, accompanied by an image (Andalibi et al., 2017).

In this study we aim to apply narrative persuasion theories to peer-to-peer support websites. Readers on peer-to-peer support websites are motivated to look for informational and emotional support in others' personal narratives (Mariën et al., 2021; Welbourne et al., 2013). As a result, readers may become persuaded by these narratives to feel better about and become more confident in coping with a distressing event (Mariën et al., 2021).

This may be especially true for narratives in which the person shows to have overcome stressful events. However, this is not always the case on peer-to-peer support websites. Young people on these websites often look for support with distressing experiences they have not yet overcome and want to find support for. Readers may come to identify with these narratives and consequently identify more with the problems they experience (Batenburg & Das, 2015), ultimately leaving readers with elevated anxiety and stress (Rains & Wright, 2016).

It is possible that the relative positive or negative effects of the use of personal narratives on peer-to-peer support websites on readers' emotional well-being and

coping self-efficacy may depend upon the tone and content of the narratives that they encounter on these websites.

More precisely, we will look into the coping self-efficacy that is portrayed in the narrative and the moderating role of identification and similarity.

RQ1: How do high and low coping self-efficacy narratives affect young readers' emotions and coping self-efficacy in relation to a stressful event?

RQ2:What is the moderating role of identification and similarity?

Positive narratives vs. negative narratives on peer-to-peer support websites

Research on narrative persuasion has shown that more positive representations of a protagonist's self-efficacy concerning a certain behavior may positively influence recipients' self-efficacy beliefs. More specifically, narrators' positive reflection upon their coping self-efficacy may have a positive impact on readers' emotions and self-efficacy. According to Bandura, "showing the gains achieved by effortful coping behavior not only minimizes for observers the negative impact of temporary distress but demonstrates that even the most anxious can eventually succeed through perseverance." (1978, p. 145).

Research on narrative persuasion has shown that more positive representations of a protagonist's self-efficacy concerning a certain behavior may positively influence recipients' self-efficacy beliefs. In the context of health communication, one study examined the effect of high vs. low self-efficacy narratives on recipients' sleep hygiene (Robinson & Knobloch-Westerwick, 2020). A narrative in which the protagonist was confident to exhibit positive sleep hygiene behaviors, had a more positive effect on readers' self-efficacy than a narrative in which the protagonist was not confident (Robinson & Knobloch-Westerwick, 2020). Although not related to health behavior, a study on the effects of fairytales found that narratives showing protagonists with high self-efficacy beliefs (e.g., Pocahontas) influenced readers' self-related control beliefs in a positive way (Isberner et al., 2019). These studies

did not show that narratives showing protagonists with low self-efficacy beliefs resulted in low self-efficacy beliefs in readers. Nevertheless, Isberner et al. (2019) warned that this may be a possibility that needs further research.

It was already suggested by previous research on peer-to-peer support websites that more positively framed personal narratives may have more benefits to readers than more negatively framed narratives. For example, qualitative research among young adults with cancer who use online social support sources showed that the participants declared that the success stories of other users helped readers to feel hopeful about their own future, whereas reading about others' negative outlooks was discouraging and even anxiety-provoking (Lazard et al., 2021). Other research within an online health community about weight loss showed that more positive framed narratives, in this case, successful experiences in which the narrator described personal success with certain weight loss behaviors, generated more interaction among readers (Wang & Willis, 2018).

In this study we aim to build upon that prior research by examining the effects of reading a high vs. low self-efficacy narrative on feelings and coping self-efficacy in relation to a negative event. We assume that readers who come to peer-to-peer support websites to learn from others' experiences and read a narrative in which the protagonist shows high coping self-efficacy may experience positive effects on their feelings and coping self-efficacy concerning a negative event, whereas a narrative in which the protagonist shows low coping self-efficacy may experience negative effects concerning their feelings and coping self-efficacy. In this study, we define coping self-efficacy as an individual's belief or confidence in their capability of implementing effective coping strategies (either behavioral and/or cognitive efforts; Folkman & Lazarus, 1984) to exert control over a stressful situation (Chesney et al., 2006). We, therefore, hypothesize the following:

H1a/b: Readers who are exposed to a narrative showing a protagonist with high (low) coping self-efficacy will experience a) more (less) positive feelings and b) higher (lower) coping self-efficacy concerning a negative event than readers who are exposed to a narrative showing a protagonist with low (high) coping self-efficacy.

Moderating effect of identification and similarity

Narrative persuasion theory hypothesizes that different processes can moderate the persuasive effect of narratives. In this study, we will investigate the moderating role of identification and similarity.

We define identification as an experience in which the reader adopts the perspective of the protagonist and experiences emotions similar to the emotions experienced by the protagonist (de Graaf, 2014). Previous research on narrative persuasion found that higher identification with the character in a narrative led readers to experience similar emotions as the protagonist and adopt corresponding attitudes (De Graaf et al., 2012; Hoeken & Sinkeldam, 2014).

Perceived similarity refers to the cognitive assessment of what someone thinks to have in common with the protagonist in the narrative (Cohen, 2001; Kupersmidt et al., 2012). This can refer to subjective characteristics such as beliefs, attitudes, and the given context of a situation, or objective characteristics such as gender and age (de Graaf, 2014). Research found that the effect of personal narratives on peer-to-peer support websites affected health behavior intention through perceived similarity (Malloch & Zhang, 2019). Bandura explains that "similarity to the model in other characteristics, which increases the personal relevance of vicariously derived information, can likewise enhance the effectiveness of symbolic modeling" (1978; p. 145).

We assume that the effects of personal narratives on peer-to-peer support websites may be moderated by the same variables. Since readers come to peer-to-peer support websites to find informational and emotional support (Mariën et al., 2021; Sun et al., 2014; Welbourne et al., 2013), they are likely to evaluate how others' narratives are relevant to themselves. The specific characteristics of forums on peer-to-peer support websites lead to personal narratives that are written from a first-person perspective. Therefore, the behaviors, views, and emotions of the protagonist form the focus of these narratives. Previous research showed that a first-person perspective may increase identification with the protagonist (De Graaf et al., 2012). We assume that these processes may increase identification and similarity. At last, it has been shown that similarity has an important influence on readers' perception of personal narratives on peer-to-peer support websites (Rains & Wright, 2016).

H2a/b: Identification will moderate the relationship between reading a narrative showing a protagonist with high (low) coping self-efficacy and the effects on change in feelings and self-efficacy concerning a negative event.

H3a/b: Similarity will moderate the relationship between reading a narrative showing a protagonist with high (low) coping self-efficacy and the effects on change in feelings and self-efficacy concerning a negative event.

Methods

Sample

We conducted an online experiment with 210 Flemish undergraduate students aged 18 to 25 years old. The mean age of the participants was 21,48 (SD = 1,86). About 63% of all participants were female.

Procedure

The online survey was set up using Qualtrics and distributed through social media ads. The ads were targeted at Flemish undergraduate students aged 18 to 25 years old enrolled in a higher education program at the time of the study. Participants were asked to read a personal narrative of someone dealing with the negative consequences of the COVID-19 pandemic and the measures taken by the government. Each participant was randomly assigned to one of two conditions. Before and after reading, the participants were asked to answer questions on their emotions and coping self-efficacy concerning the difficulties they experienced as a result of the measures taken by the government to curb the COVID-19 pandemic, to measure changes as a result of the reading assignment. We specifically focused on difficulties resulting from the measures taken by the government and not the COVID-19 pandemic as a whole, because of the understanding that participants' reactions towards the difficulties they experienced are much more controllable than the COVID-19 pandemic as a whole. Data were collected in March of 2021 during which university classes were limited to an absolute minimum, cafés and restaurants were closed, most indoor activities were prohibited and outdoor organized sports and leisure activities were limited to a maximum of 4 people.

Social contacts in general were restricted to a maximum of four close contacts per household. The ethics committee (university and name of the committee blinded) granted permission to conduct this study.

Materials

For this experiment, two narratives were adapted from narratives that were collected in chapter 2 (Annex 2). Quantitative content analysis showed that young people experienced the most difficulties with regard to the lack of social contact and support, homeschooling, missing out on experiences, and conflicts at home. Positive reframing, social contact, physical activity, and distraction were the most mentioned coping strategies. We made sure to include these difficulties and accompanying coping strategies in the narratives to make realistic representations of young people's worries during the COVID-19 pandemic.

The narratives contained approximately 750 words. This number was based on prior research by Isberner et al. (2019) and Robinson and Knobloch-Westerwick (2020) who used narratives of approximately 1000 words in length. The independent variable, coping self-efficacy of the protagonist, was manipulated. Except for the claims regarding one's coping self-efficacy and the results of the protagonists' coping behavior, the content of the two narratives remained the same. In the high coping self-efficacy narrative, the protagonist showed high confidence in overcoming the difficulties resulting from the COVID-19 pandemic and accompanying positive emotions and consequences of one's behavior. High coping self-efficacy was portrayed via sayings such as 'I generally cope well with the situation' or 'Yet, I can still put things into perspective'. The positive consequences of one's coping strategies were reported via sayings such as 'a fixed day planning really helps me' or 'sports take my mind off things and make me feel good'. In the low coping self-efficacy narrative, the protagonist showed low confidence in overcoming the difficulties resulting from the COVID-19 pandemic and accompanying negative emotions and consequences of one's behavior. Low coping self-efficacy was reported via sayings such as 'I have no idea how to deal with all my feelings and thoughts', 'I can't put things into perspective anymore' or 'I don't manage to bring structure into my days'. The negative consequences of one's ineffective coping strategies were reported via sayings such as 'this makes me feel very alone' or 'sports don't really help me take my mind off things'.

Measures

Change in feelings in relation to the COVID-19 pandemic

A pre-and post-measure of positive and negative emotions concerning the COVID-19 pandemic was assessed using the PANAS scale. The scale was introduced using the following sentence. "Please indicate how you feel about the difficulties you experience as a result of the corona measures. I feel...". Participants scored the positive and negative emotions on a scale from 1 (not at all) to 7 (extremely). The scores were combined to represent relative positive emotions. The scale showed good reliability for both the pre-measure (α = .820) and post-measure (α = .843). The difference between feelings before and after reading (Post-measure – pre-measure) was calculated and used as the dependent variable in the analyses (M = -.07; SD = .46).

Change in coping self-efficacy in relation to the COVID-19 pandemic

A pre-and post-measure of coping self-efficacy concerning the COVID-19 pandemic was assessed using the Coping Self-efficacy scale by Chesney et al. (2006). The scale was introduced using the following sentence: "Please indicate how much confidence you have in yourself to engage in the following behaviors concerning the difficulties you are experiencing as a result of the corona measures. I have confidence in myself to...". The scale showed good reliability for both the pre-measure (α = .916) and post-measure (α = .938). The difference between coping self-efficacy before and after reading (Post-measure – pre-measure) was calculated and used as the dependent variable in the analyses (M = -.04; SD = .40).

Narrative persuasion variables

We used the scale by de Graaf (2014) to measure identification. Respondents had to indicate on a scale from 1 (totally disagree) to 7 (totally agree) the extent to which they identified themselves with the person in the narrative (α = .904; M = 5.49; SD = 1.11). Three items reflected cognitive perspective taking (e.g., "During reading, I imagined what it would be like to be in the position of the protagonist") and three items reflected emotional perspective taking (e.g., "I felt tense when the character felt tense"). Similarity was measured using the perceived similarity scale of Cohen et al. (2018). On a scale from 1 (totally disagree) to 7 (totally agree) the respondents had to indicate to what extent they agreed with the 3 items: "I feel the character and I have many things in common," "the character and I are similar in many ways,"

and “there are many similarities between the character and myself”. The items formed a reliable scale (α = .933; M = 4.67; SD = 1.42).

Results

Manipulation check

Participants were asked to score on a scale from 1 to 5 whether the narrator of the narrative they had read exhibited either low or high coping self-efficacy (two items) and focused mainly on the positive or negative consequences (two items). We used IBM SPSS Statistics Version 28 to conduct a MANOVA analysis to check whether the manipulation had worked. Using Pillai’s trace test, the analysis shows a significant difference in the manipulation variables between the high and low coping self-efficacy narrative ($V = .992$, $F(2, 204) = 5101.569$; $p < .001$). Pairwise comparisons between the two conditions reveal that the high coping self-efficacy narrative was rated significantly higher in coping self-efficacy, compared to the low coping self-efficacy narrative (MD = 2.18, SD = .10, $p < .001$). The high coping self-efficacy condition also scored higher on focus on positive consequences (MD = 1.63, SD = .11, $p < .001$). The low coping self-efficacy condition was rated lower in coping self-efficacy, compared to the high coping self-efficacy narrative (MD = 2.05, SD = .12, $p < .001$). The low coping self-efficacy condition also scored higher on focus on negative consequences (MD = 1.87, SD = .11, $p < .001$). These differences confirm that the manipulation of the high and low coping self-efficacy narratives has worked.

Hypotheses 1a/b: Effect on emotions and coping self-efficacy

To test hypotheses 1a/b we used IBM SPSS Statistics Version 28 to conduct a MANOVA analysis with change in emotions and coping self-efficacy as dependent variables. Pillai’s Trace showed a significant difference between the two conditions [$F(2, 201) = 5.03$, $p < .010$]. More precisely, pairwise comparisons showed that after reading, emotions were significantly more positive for the high coping self-efficacy narrative compared to the low coping self-efficacy narrative (.196, SD = .063, $p < .010$). There was no significant difference found in coping self-efficacy between the two narratives after reading (.052, SD = .056, $p = .354$). Hypothesis 1a is therefore accepted, while hypothesis 1b is not. Gender did not have a significant effect on these results.

Hypotheses 2a/b: Identification as a moderator

A moderation model with change in feelings as a dependent variable and identification as a moderator, shows a positive effect of the high coping self-efficacy narrative in comparison to the low coping self-efficacy narrative (b = .173, S.E. = .07; BC 95% CI [.032 to 0.313]), but no significant moderating effect of identification (b = .088, S.E. = .07; BC 95% CI [-.057 to 0.233]). Similarly, a moderation model with change in coping self-efficacy as a dependent variable and identification as a moderator also shows no moderating effect of identification (b = .081, S.E. = .07; BC 95% CI [-.048 to 0.209]). Hypotheses 3a/b are therefore rejected. Gender did not affect change in feelings and coping self-efficacy.

Hypotheses 3a/b: Similarity as a moderator

A moderation model with change in feelings as a dependent variable and similarity as a moderator, shows a positive effect of the high coping self-efficacy narrative in comparison to the low coping self-efficacy narrative (b = .211, S.E. = .06; BC 95% CI [.080 to 0.341]), but shows no significant moderating effect of similarity (b = .070, S.E. = .07; BC 95% CI [-.054 to 0.194]). A moderation model with change in coping self-efficacy as a dependent variable and similarity as a moderator shows a significant moderating effect of similarity (b = .123, S.E. = .06; BC 95% CI [.013 to 0.232]). The conditional effects of the Johnson-Neyman output show that the moderating effect of similarity is significant starting from a value of .916 (p= .050) and above. Hypothesis 5b is therefore accepted, whereas hypothesis 5a is rejected. Gender did not have a significant effect on change in feelings and coping self-efficacy.

Discussion

General discussion of the results

Based on narrative persuasion theory, this study predicted and tested whether a personal narrative showing a protagonist with high vs. low coping self-efficacy may influence readers' emotional responses and coping self-efficacy concerning a stressful event, in this case, the COVID-19 pandemic. Identification and similarity were examined as moderating variables.

The results showed that in general the narrative showing high coping self-efficacy had a positive effect on emotions experienced by the participants compared to a narrative showing low coping self-efficacy. These results are in line with previous studies showing that a narrative of a protagonist with high coping self-efficacy may positively influence readers (De Graaf et al., 2016; Isberner et al., 2019; Robinson & Knobloch-Westerwick, 2020). However, this positive effect was only found for a change in feelings and not for a change in coping self-efficacy. Possibly the persuasive effect of personal narratives on readers' coping self-efficacy may be more complicated than emotions. The effects on coping self-efficacy may be delayed or may not change as a result of reading one narrative but as a cumulative effect of reading multiple narratives.

The study found support for the possible moderating effect of similarity on coping self-efficacy. Those who read a high coping self-efficacy narrative and perceived more similarities between themselves, and the protagonist experienced a higher positive effect on their coping self-efficacy in comparison to other participants. Previous research already continuously shows that finding similar others on peer-to-peer support websites is an important need for users to experience the benefits of using peer-to-peer support websites (e.g., Mariën et al., 2021).

Since objective characteristics (e.g., gender, age, and other person-specific characteristics) were not presented in the personal narratives in this study, similarity was based on subjective characteristics of the protagonist (e.g., What does the protagonist experience? How do they feel? How do they deal with difficulties?). In other words, if the reader could resonate with the protagonist's experiences, behaviors, and goals concerning the COVID-19 pandemic, the narrative had a higher positive impact on readers' coping self-efficacy. The study by Robinson and Knobloch-Westerwick (2020) showed similar results. Those readers who experienced greater social comparison, or in other words compared oneself with the main character to evaluate one's ability to overcome a certain problem, experienced increased sleep-related self-efficacy (Robinson & Knobloch-Westerwick, 2020).

This study did not find support for the moderating role of identification on emotions and coping self-efficacy. As previous research suggested, the precise moderating

variables that explain the effect of narratives may also depend on the type and form of the narratives that are presented (De Graaf et al., 2016). For the personal narratives in this study, the similarities experienced by the readers between themselves and the protagonist (i.e., similarity) may define the persuasive effect on participants' emotions and coping self-efficacy.

In general, gender did not show a relation with the effect of the narratives on participants' emotions and coping self-efficacy.

Practical implications

Based on the results of this study we recommend to encourage writers on peer-to-peer support websites to focus more on the effectiveness of their coping strategies and the positive consequences of their behavior when writing a personal narrative for the benefit of the readers. Peer-to-peer support websites can do so by offering specific writing instructions or prompts to stimulate writers to focus more on effective coping strategies.

The results of this study also show that perceiving similarities between oneself and the protagonist may strengthen the effect of the narrative on readers' coping self-efficacy positively. In this study, perceived similarity is based on subjective characteristics of the protagonist, such as the way the protagonist experienced a situation and how he/she dealt with it. Therefore peer-to-peer support websites should help users to find others with similar experiences. Peer-to-peer support websites often categorize personal narratives posted on the message boards in very general themes. The search engines of this website could be better optimized by providing more specific search terms to find more applicable narratives that best match their own personal experiences. Possibly, natural language processing techniques (NLP), making use of machine learning to understand and generate text messages in an automated manner, could be used in this context to optimize the search engines of peer-to-peer support websites.

Limitations and further research

Narrative persuasion theory and the moderating variables we apply here have been primarily studied with stories for entertainment purposes and narratives for health communication purposes. Personal narratives on social support websites are not

meant for entertainment nor to convince people to make healthy choices. Therefore, it is possible that still other moderating variables are in effect. This could possibly explain the non-significant results. Next research will benefit from a thorough theoretical reflection on the possible moderating variables for the influencial effect of personal narratives on social support websites on readers. For example, beside the moderating narrative persuasion variables that we controlled for in this study, previous research also considered that social comparison processes may account for the effects of reading personal narratives of others (Malloch & Zhang, 2019).

The personal narratives in this study were not presented and tested within the controlled environment of a peer-to-peer support website. A possible disadvantage of this is that participants may not have perceived the narratives in this study to be authentic personal experiences from real people. Although the narratives were based on real-life experiences described by young adults to ensure realism, it is still possible that people were less involved in the narrative or could not sufficiently identify with the person in the narrative because the narratives may have seemed crafted. Because of this, we can only make assumptions about the applicability of the results that we found in this study to the context of peer-to-peer support websites. Further research could replicate this study within an existing or fictitious peer-to-peer support website for young people to overcome this problem.

This study also has some limitations that need to be mentioned. Previous research on the effects of personal narratives on people's self-efficacy concerning health behavior change examined the effects of narratives over different periods of time (e.g., three days after narrative exposure; Robinson & Knobloch-Westerwick, 2020) or a longer period of usage (e.g., two weeks; Giesler et al., 2017). This has to be studied in further research.

This study was tested with a small and limited sample. The results that are obtained apply to young adult undergraduate students only. The results should therefore not be generalized to a wider population.

Conclusion

Based on narrative persuasion theory, this study predicted and tested whether a personal narrative showing a protagonist with high vs. low coping self-efficacy may influence young readers' emotional responses and coping self-efficacy concerning a stressful event, i.e., the COVID-19 pandemic. The results indicated that the young adults who participated in this study and read the high coping self-efficacy narrative experienced a higher increase in positive feelings than those who read the low coping self-efficacy narrative. Moderation analysis indicated that similarity with the protagonist strengthened the positive effects found on coping self-efficacy. Based on these results we recommend to encourage writers on peer-to-peer support websites to focus more on the effectiveness and the positive consequences of their coping strategies when writing a personal narrative. Peer-to-peer support websites can do so by presenting writers with specific writing instructions, templates, or prompts. Additionally, peer-to-peer support websites should offer more possibilities for readers to find personal narratives that best match their own experiences.

CHAPTER 4

SEEKING SOCIAL SUPPORT ONLINE:

Can an interactive interface help adolescents share personal stories?

Abstract

Writing personal stories on peer-to-peer support websites may help adolescents to get social support responses from others and become more confident in coping with distressing events. However, adolescents may find it difficult to put their experiences into words. Existing peer-to-peer support websites give little or no information on how to write a constructive personal story. This study examines the applicability of an interactive interface that guides adolescent users in writing their personal stories in a step-by-step manner on a fictitious peer-to-peer support website. The results showed that perceived scaffolding, or perceived helpfulness and benevolence of the interface feature, mediated the effects found on attitude toward the website and intention to use. The results were indicative of a suppression effect, meaning that adolescents may resent the use of an interactive interface if they do not perceive the feature as scaffolding them through the process of writing, resulting in adverse effects.

Introduction

Sharing personal stories on an anonymous peer-to-peer support websites may help adolescents to get social support responses from others and become more confident in coping with distressing events. However, it may be difficult for adolescents to put distressing experiences into words in the form of a personal story, as they may not have developed all the cognitive skills needed for effective reflection and writing (Berk, 2014; Conover & Daiute, 2017; Skinner & Zimmer-Gembeck, 2016). Peer-to-peer support websites seem to give little or no information on how to write a constructive personal story.

Studies have shown that interactive interface features in the form of writing instructions and prompts in an online context can facilitate communication processes between the user and the system as well as conversations between users (e.g., Lee et al., 2016; O'Leary et al., 2018). Therefore, we expect that similar writing instructions on a peer-to-peer support website for adolescents may facilitate their writing process on distressing events. This could eventually make them rely more on peer-to-peer support websites during recurring situations of distress.

However, interactive interface features to enhance writing have not yet been implemented in the context of a peer-to-peer support websites. Moreover, similar studies have not yet been conducted with adolescent samples. Thus, it is not clear whether adolescents find these kinds of writing instructions helpful and desirable.

In this study, we will examine the applicability of an interactive interface on a fictitious peer-to-peer support website for adolescents. We compare an interactive interface, in which the user is presented with specific questions to elaborate on their experience and to write their personal story in a step-by-step manner, with a non-interactive interface that closely resembles the interface of a forum on a peer-to-peer support website. We use the principles of the Theory of Interactive Media Effects (TIME) by Sundar et al. (2015) as our main theoretical framework to examine how young people evaluate a peer-to-peer support website with an interactive interface and whether they would like to use it in the future. This study can help to redesign peer-to-peer support websites that rely on the sharing of personal stories to optimize social support and emotional relief for adolescents in times of stress.

Literature review

Interactive features and dialogue systems on peer-to-peer support websites

Studies have shown that interactive interface features in the form of writing instructions and prompts in an online context can facilitate communication processes between the user and the system as well as conversations between users.

One study showed that a writing app linked to Facebook, in which adult participants were prompted to write daily about distressing events that affected their emotions for a period of two weeks, affected their emotional well-being, and online behaviors in a positive way (Lee et al., 2016). More precisely, participants in the experimental condition were asked to describe the event, the precise emotions it elicited, and what they could say to themselves to reappraise the situation. The study found that the participants in the experimental condition experienced significantly fewer depressive symptoms after the experiment compared to participants in the control condition (Lee et al., 2016).

Another study by O'Leary et al. (2018) found that guided private chats on peer-to-peer support websites, in which the conversation partners were given prompts to steer the conversation and deliver appropriate support to each other, reached more depth, and received more appreciation from both conversation partners. Another study suggested that a chatbot on a peer-to-peer support website could provide an additional effective affordance to existing peer-to-peer support websites for young people because they can help users with tips to discuss their distressing experiences in a more constructive and effective manner (Lazard et al., 2021).

An interactive interface to facilitate writing on a peer-to-peer support website: The application of the TIME model

The Theory of Interactive Media Effects (TIME; Sundar et al., 2015) predicts and examines the effects of interface features of media on users' perceptions, attitudes, and behavioral intentions in relation to a medium. It is expected that cues may directly influence people's perceptions of a medium, whereas an action may first and far most affect user engagement, which will, in turn, result in changes in knowledge, attitudes, and behavioral intentions in relation to the medium (Sundar

et al., 2015). Previous experimental research has successfully used the principles of the Theory of Interactive Media Effects (TIME; Sundar et al., 2015) in the context of health communication and the context of peer-to-peer support websites more specifically.

For example, Kim and Sundar (2014) examined the applicability of bandwagon cues (i.e., a visual cue expressing the popularity and quality of one's posts in the community) and a buddy system (i.e., an action in which users are paired to deliver social support responses to each other) on a peer-to-peer support website. More precisely, the study explored how this cue and action influenced psychological outcomes, such as social presence and sense of community within the peer-to-peer support websites, and perceived helpfulness of one's posts. It was predicted that these psychological attributes mediated participants' website attitudes and posting intentions. The study found that positive bandwagon cues were correlated with a higher sense of community and helpfulness of one's posts, and as a result, predicted a more positive attitude toward the website and higher posting intention. The buddy system, however, was negatively correlated with the psychological attributes (i.e., lower social presence and sense of community) and therefore resulted in a negative attitude toward the website and a lower posting intention. The study also found that the bandwagon cues and buddy system interacted with each other and led to different outcomes (Kim & Sundar, 2014). To conclude, the researchers of this study chose to study the effects of both cues and actions at the same time. The authors made specific recommendations for the application of these interface features in the context of peer-to-peer support websites (Kim & Sundar, 2014).

Another study found that interface cues interact with message content and as a result influence users' evaluation and acceptance of persuasive messages (Li & Sundar, 2021). In this study, bandwagon cues made health messages more persuasive. Seeing others approve of the health message reduced the reactance toward the message. In addition, participants who could comment on the health message were also more likely to follow the recommendation suggested by the message (Li & Sundar, 2021).

In general, other research has mainly studied the effects of cues, or mere visual aids, in the context of online health communities and peer-to-peer support websites (e.g., Kim et al., 2018; Li et al. 2015). Actions and their effects have been studied less in this context. Therefore, we will focus on a specific action, namely the use of an interactive interface design, and study its applicability on a peer-to-peer support website for adolescents.

RQ1: How do adolescent users of a peer-to-peer support website experience the use of writing of an interactive interface?

RQ2: And how does this affect their attitude toward the website and intention to use the website in the future?

Interactivity

According to the TIME model, an interactive interface as we will test in this study is a form of 'message interactivity' presented by the website. Message interactivity can be defined as "an interface's capacity for conducting a dialogue or information exchange between users and the interface" (p.33; Sundar et al., 2003). Sundar et al. (2015) further explain that "when users use these tools to navigate in different orders and make decisions on which parts of the content to read and which to ignore, they exchange messages with the interface in an idiosyncratic manner. This is analogous to a conversation between two humans in that the course of the interaction is highly contingent upon prior input." (p. 56)

Perceived dialogue

Message interactivity of a medium may help to facilitate and enhance communication between the user and the medium. It is realized in the form of information organization and resembles an offline human interaction. In other studies, this is also referred to as a 'conversational ideal' (Oh & Sundar, 2015; Sundar et al. 2016). A meta-analysis on the effects of interactivity has demonstrated that it may result in positive attitudes and favorable behavioral intentions in relation to the medium at hand, also in health communication contexts (Yang & Shen, 2018).

If we translate this to the interactive interface, we can expect that the interaction presented by the interface will enhance interactivity between the adolescent user and the peer-to-peer support website. By answering the questions, the user may perceive a dialogue or in other words, feel as if a conversation with the website is taking place.

Perceived scaffolding

The guidance that is provided through the interactive interface may enhance users' navigation of the website and facilitate writing. According to Sundar et al. (2015), this may cue the so-called 'scaffolding heuristic', which reflects the degree to which users perceive the interface of the medium as benevolent and helpful to perform tasks presented by the medium in the best way possible. We expect that users who make use of the interactive interface will perceive more scaffolding on behalf of the website than the non-interactive interface (H1).

User engagement

According to Sundar et al. (2015) message interactivity "leads to greater user engagement (...) with media by enhancing the contingency or interdependency in message exchanges" (p. 52). User engagement is generally described as a psychological state where users are either cognitively or emotionally involved in a task at hand (Oh & Sundar, 2015). Because the interactive interface offers questions to think more deeply and systematically about the story that the user is writing, we expect that the interactive interface will lead to higher engagement in using the website to write a personal story compared to the non-interactive interface (H3).

Attitude toward the website and intention to use the website

The TIME model expects that perceived scaffolding, as a psychological correlate, may have a positive effect on engagement with the website (Sundar et al.,2015). Engagement, in turn, will have a positive effect on users' attitudes toward the medium and intentions for use. Therefore, we predict a serial mediation effect from the interactive interface on attitude and intention for use, through perceived scaffolding and engagement (H3a/b).

H1: The interactive interface will result in higher perceived scaffolding than the non-interactive interface.

H2: The interactive interface will elicit higher user engagement compared to the non-interactive interface.

H3a/b: The interactive interface will have a positive effect on a) attitude toward the website and b) intention to use the website through higher perceived scaffolding and higher user engagement as mediating variables.

Socio-demograhipcs and personality characteristics

How young users will use and perceive the interface design of our peer-to-peer support website may depend on several socio-demographical and personality traits. Concerning socio-demographical traits, we will control for age, gender, level of education, and perceived well-being.

It is understood that emotional and cognitive resources to effectively reflect on distressing events may increase in the period between young adolescence and young adulthood (Travagin et al., 2015; Taylor et al., 2016). For this reason, it is possible that younger adolescents may find it harder than older adolescents to write about their experiences but may also benefit the most from the interactive interface.

Research has shown that girls self-disclose more online than boys across different online contexts (Hollenbaugh & Everett, 2013; Frison et al., 2019). Boys may dislike writing a personal story about a distressing event and find it more difficult to write about emotions than girls (Travagin et al., 2015). Research has already shown that boys may be more reluctant to use online social support resources and mental health apps (Kenny et al., 2016).

Previous research has suggested that men and women may have different preferences for interactive features of online media. A study on blogs showed that women were more interested in the social aspect of blogging, therefore liking the

features that allowed them to interact with others more than men (Lu et al., 2009). For example, previous research found that women feel more immersed in using interactive features that lend them the opportunity to interact with others than features that lend them the opportunity to interact with the computer, whereas men did not experience a difference (Kothgassner et al., 2018). Another study showed that interactive features that supported communication with other users, in this case, a comment feature, appealed more to women than to men (Huang et al., 2021).

Research on online peer communication among adolescents showed that adolescents from vocational study levels find it harder to express themselves in written language (Hilte, 2019). Young people's perceived well-being may explain whether or not they feel a need to talk about distressing events. Because of these reasons, age, gender, level of education, and perceived well-being may explain the attitude toward the website and the intention to use the website.

Furthermore, we will control for the influence of emotional expressiveness and personal need for structure as personality traits. Emotional expressiveness or the degree to which someone finds it easy to share their emotions with others may be an important factor. In an experiment by Niles et al. (2014), it was shown that participants who expressed their emotions more easily also derived more benefits from writing about difficult experiences. It could be that these people are also generally more positive about writing about difficult experiences and therefore they are also more positive about using these websites. A Personal need for structure is associated with a preference for well-ordered situations and tasks (Rietzschel et al., 2014). One study showed that participants who scored high on a scale of personal need for structure preferred structured approaches to a creative task over other choices (Rietzschel et al., 2014). Thus, in general, we assume that young people with a high personal need for structure may prefer the interactive interface more than those who do not have a specific preference for structure.

Methods

Sample

Dutch-speaking adolescent participants were recruited in Flanders, Belgium. Participants were aged 14 to 18 years old and were recruited via secondary schools. After a quality check (i.e., completion of the questionnaire and control questions) a sample of 109 adolescents out of 151 initial participants remained. Participants had an average age of 15.76 (SD = 1,33) and 54% of the respondents were male. 55% of participants were signed in general education compared to 45% in technical and vocational education. To measure participants' previous knowledge and use of peer-to-peer support websites, we asked about their familiarity with a well-known peer-to-peer support website. A total of 75% percent of the participants had heard about the website but claimed not to have visited the website before. Only 17% of the sample had read personal stories of others on the website. Only four participants said that they had shared their own personal stories on this website or had used a similar peer-to-peer support website before. In other words, the majority of participants were familiar with the concept of a peer-to-peer support website, but only a minority had used a peer-to-peer support website thus far.

Procedure

The participants filled in an online questionnaire through Qualtrics in their classroom under the supervision of a teacher and a researcher. The students were asked to consent to participate in the study. This study was ethically approved by the ethical research council of the university conducting this study. First, the participants filled in questions on demographics, personality, and previous knowledge and use of peer-to-peer support websites. Secondly, the participants were directed to our fictitious peer-to-peer support website, called 'çava' (meaning 'it's okay' in French). The participants were informed that the website was not open to the public and that therefore their story could not be read by others. The participants were randomly assigned to one of two conditions: the peer-to-peer support website with the interactive interface or the peer-to-peer support website with the non-interactive interface. On this webpage, they were asked to write a personal story on a recent distressing event. After writing their personal story, they were redirected to the questionnaire to fill out questions on their experiences with the website.

Materials

Fictitious peer-to-peer support website

A fictitious peer-to-peer support website called 'çava' (meaning 'it's okay' in French) was developed in Webflow. The functionalities of the website were limited to a home page and a writing page. The home page welcomed the participants with a general invitation to share their personal experiences openly (Annex 3). The manipulation of message interactivity was accomplished within the interface design of the writing page. In this way, we created two different conditions, each with a different design: a webpage with a structured input field, resembling higher message interactivity, and a webpage with a blank, unstructured input field.

Interactive interface

The interactive interface design consisted of 8 steps (Annex 4). In the first step, the landing page showed a short introduction with the following sentence: "Everyone faces difficult experiences at one time or another. Here you are given the space to tell your story.". The participants had to click 'start' to go to the second step, in which the participants were asked to select a general theme for their story before writing. These themes were based on existing peer-to-peer support websites.

In steps 3 to 6, participants were offered several intermediate questions that would serve as a guide to reflect on their chosen topic and/or problem in a step-by-step manner and to be able to bring structure to the story they wanted to tell. These questions were in correspondence with an evidence-based practical tool, called 'the G scheme', which is often used in Cognitive Behavioral therapy sessions (VGCt, 2018). Cognitive Behavioral Therapy assumes that wrong interpretations of distressing experiences may lead to negative thoughts and feelings which may ultimately result in psychological problems and that a better understanding of the relations between one's thoughts, feelings, and behaviors may form the solution to better coping behaviors (Hofmann & Asmundson, 2017).

Participants were sequentially asked to write their story by reflecting on 4 questions. For all 4 questions, a different input field was shown. In each input field, they could see what the next step was about (e.g., in the input field about thoughts and feelings, they could read that the next question would evolve behavior and consequences). A bar underneath the input fields showed how many steps were

still to come. In the 7th step, the website compiled the story, and the participants were asked to rewrite their story more fluently and add further details or questions if needed. In the 8th and final step, the participants were asked to write a suitable title for their story. By answering the questions, the user may perceive a dialogue or in other words feel as if a conversation with the website is taking place, therefore resulting in more interactivity. The interactive interface design of our writing page can be viewed in the annex (Annex 4).

Non-interactive interface

The non-interactive interface consisted of 4 steps (Annex 5). The first two steps were identical to the interactive interface. In the 3rd step, they were offered a blank input field in which the participants could write their personal stories. The non-interactive interface design therefore closely resembles the interface design of writing pages on many peer-to-peer support websites nowadays. In the 4th and last step, they were asked to write an appropriate title for their story before submitting it to the website. The non-interactive interface design of our writing page can be viewed in the annex (Annex 5).

Data analysis

Apart from testing the hypotheses of this study using serial mediation models by Hayes's SPSS macro PROCESS (2017), we believed that further qualitative data on participants' experiences with the use of the website may result in additional interesting information to their evaluation of the website. Therefore, we included an open question at the end of the online questionnaire asking participants to further explain their experiences with the websites they used. Afterward, we conducted a quantitative content analysis of the narratives that were written to compare the differences between the narratives written in the interactive and non-interactive interface. Did participants follow up on all the different steps within the structured interface design? Is there a difference in narrative content and length for both interfaces? Finally, we analyzed participants' written feedback on the website. This information may give some more insight into the overall results of this study.

Measurements

Perceived dialogue

We included a measure of perceived dialogue for our manipulation check. This measure was based on the original scale by Sundar et al. (2016). The 5 items were

measured on a scale from 1 (totally disagree) to 7 (totally agree) and altered to the context of the peer-to-peer support website in question, for example, “It seemed that the website and I had the task of writing a story together.”. The scale showed good reliability (α = .826).

Perceived scaffolding

To measure scaffolding, participants were given 5 items to rate the instructions they received on the website. An example is “The web page helped me step by step to write my story” (Sundar & Limperos, 2013). The scale showed good reliability (α = .701).

Engagement - absorption

To measure engagement, respondents had to rate 3 items related to the absorption they experienced while using the website. For example, “While I was using the website, my attention was not distracted” (Agarwal & Karahanna, 2000). The scale showed good reliability (= .763).

Attitude toward the website

Attitude toward the website was measured through a general website attitude scale that has previously been used in comparable studies (Kalyanaraman & Sundar, 2006; Kim & Sundar, 2014). Respondents were asked to rate several features of the website with a score from 0 (totally disagree) to 10 (totally agree). Examples of the attributes they had to rate are “appealing” and “user-friendly. The scale showed good reliability (α = .944).

Intention to use the website

We use the Behavioral intention toward the website scale (Kim et al., 2018). Participants were asked to rate 3 items on a 7-point Likert scale. An example of an item is “I would like to visit this website in the future”. The scale showed good reliability (α = .815).

General well-being

We included a measure of general well-being as a covariate in our analyses. We used the Kidscreen-10 (Ravens-Sieberer et al., 2010). This scale measures children’s and adolescents’ well-being and health-related quality of life over the past week with 10 items ranging from 1 (never) to 5 (always). An example of an item is, “How often did you feel lonely?” The scale showed good reliability (α = .802).

Personal need for structure

Personal need for structure was measured by a scale used in previous studies (Rietzschel et al., 2014; Svecova & Pavlowicova, 2016). The concept was measured with 12 items ranging from 1 (totally disagree) to 6 (totally agree) such as "I enjoy having a clear and structured mode of life". The scale showed good reliability (α = .707).

Emotional Expressivity

We included a measure of emotional expressivity as a covariate in our analyses. The Emotional Expressivity Scale was used to measure participants' general tendency to show emotions to others in an offline context (Kring et al., 1994). The concept was measured with 17 items ranging from 1 (never) to 6 (always). The scale showed good reliability (α = .736).

Content analysis on the personal stories

Similar to the analyses in chapter 2, we conducted a quantitative content analysis on the stories written in each of the interface designs. We calculated the number of positive and negative emotions, positive and negative aspects concerning the distressing event written by the participants, and statements about the effectiveness and ineffectiveness of coping strategies written by the participants. To identify coping strategies, we based our content analysis on the items in the brief COPE (Carver, 1997).

Open question on the evaluation of the website

At the end of the online questionnaire, we included an open question to ask participants to further explain their experiences with the websites they used.

Results

Descriptive statistics

Table 3 shows the descriptive statistics and correlations between the variables. There were strong and moderate positive correlations between perceived dialogue, perceived scaffolding, and engagement with the website. The attitude toward the website was strongly positively correlated with perceived dialogue, perceived scaffolding, and engagement with the website. Intention to use the website had a moderate positive correlation with perceived dialogue and perceived scaffolding

and a strong positive correlation with engagement with the website. The two dependent variables of our study, website attitude and intention to use the website, were highly positively correlated with each other, showing that if participants had a positive attitude toward the website, they were also much more likely to have the intention to use the website in the future.

Table 3. Descriptives and correlations

		1	2	3	4	5	6	7	8	9
1	*Age*	--								
2	*General well-being*	-.239*	--							
3	*Personal need for structure*	.054	-.013	--						
4	*Emotional expressiveness*	.070	.256**	.034	--					
5	*Precieved dialogue*	.075	.032	.031	.20	--				
6	*Precieved scaffolding*	-.060	.129	.178	.146	.533**	--			
7	*Engagement*	.201*	-.297**	.196*	-.070	.238*	.309**	--		
8	*Attitude toward the website*	.217*	-.066	.132	.095	.544**	.483**	.420**	--	
9	*Intention to use the website*	.213*	-.232*	.054	.002	.213**	.293**	.409**	.595**	--
	M	15,79	3,56	3,39	3,36	4,20	4,32	4,70	6,72	3,72
	SD	1,33	.58	.71	.59	1,23	.87	1,00	1,75	1,52
	Range	14 - 18	1 - 5	1 - 6	1 - 6	1 - 7	1 - 6	1 - 6	1 - 10	1 - 7

Manipulation check

To check whether the manipulation of message interactivity through the interface design had worked, we included a question right after using the website. Participants had to answer what they were asked to do on the website they had

just visited: either write a story or write a story by answering different questions about one's experience. A Chi-Square analysis showed that there was a significant difference between these two groups ($X^2(1) = 84.010$, $p < .001$) meaning that the participants in general selected the right answer to this question. Furthermore, we did an independent samples T-test to see whether there was a significant difference in perceived dialogue as an indicator of message interactivity between the two conditions. The analyses did not show a significant difference between these two groups ($t(107) = 1.599$, $p = 0.113$). Thus, the participants did not perceive more dialogue in the interactive interface compared to the non-interactive interface. We will further discuss this finding in the discussion section.

Hypotheses testing

To test hypotheses 1 and 2 we conducted two independent samples T-tests. The results showed that the difference in scaffolding between the interactive interface ($M = 4.62$; $SD = .89$) and the non-interactive interface ($M = 3.91$; $SD = .74$) was significant ($t(107) = -4.52$; $p < .001$). Hypothesis 1 was therefore supported. The results showed that the difference in engagement between the interactive interface ($M = 4.65$; $SD = 1.08$) and the non-interactive interface ($M = 4.79$; $SD = 1.87$) was non-significant ($t(107) = .718$; $p < .747$). Hypothesis 2 was therefore not supported.

To test hypothesis 3a/b we conducted two serial mediation models using Hayes's SPSS macro PROCESS (2017) model 6 with 95% bias-corrected confidence interval (CI) based on 10,000 bootstrap samples to examine the direct and indirect effects of the interfaces on attitude toward the website and intention to use the website through mediating variables scaffolding and absorption. Gender, age, level of education, well-being, emotional expressivity, and personal need for structure are included as covariates in this analysis. Figure 8 and Figure 9 show our main findings.

The overall models were significant, both for the model with attitude toward the website ($R^2 = 0,67$, $F(9, 99) = 8,83$, $p = 0.000$) and intention to use the website ($R^2 = 0,58$, $F(9, 99) = 5,54$, $p = 0.000$) as dependent variables. While the total effects are positive and significant for attitude towards the website ($b = .675$, $S.E. = .24$; BC 95% CI [.222 to 1.158]) and for intention to use the website ($b = .348$, $S.E. = .18$; BC 95% CI .026 to .719]) results do reveal a negative significant direct effect of the interactive interface on the attitude toward the website ($b = -1.039$, $S.E. = .30$, $p = 0.001$; BC 95% CI [-1.629 to -.448]) and intention to use the website ($b = -.670$, S.E.

= .28, p = 0.020; BC 95% CI [-1.231 to -.110]). This was a result we did not expect. The relation between the other variables may give more insights into this relation.

The serial mediation model shows that the interactive interface significantly positively affected perceived scaffolding (b = .646, S.E. = .16, p = 0.000; BC 95% CI [.330 to .962]). This means that in general the interactive interface was perceived as more benevolent than the non-interactive interface. This result is consistent with our earlier analyses in which H1 was supported. The interactive interface scores lower on engagement than the non-interactive interface (b = -.400, S.E. = .19, p = 0.034; BC 95% CI [-.771 to -.030]). An independent samples T-test already showed this difference was not significant, and hypothesis 2 was therefore not supported.

In H3a/b we expected that perceived scaffolding and engagement would mediate the effects of the interactive interface on the dependent variables. The results from de serial mediation model show that the perceived scaffolding had a positive effect on engagement (b = .473, S.E. = .11, p = 0.000; BC 95% CI [.259 to .688]), meaning that the more participants perceived the interface they used as helpful, the more they felt absorbed into the writing task as well. Results show that perceived scaffolding had a significant positive effect on both attitude toward the website (b = 1.091, S.E. = .18, p = .000; BC 95% CI [.726 to 1.456]) and intention to use the website (b = .584, S.E. = .18, p = .001; BC 95% CI [.238 to .931]).

The output shows a mediating effect through perceived scaffolding, both for attitude toward the website (b = .705, S.E. = .21; BC .335 CI .1.152) and intention to use the website (b = .378, S.E. = .15; BC .130 CI .697). With regard to engagement, the output for the mediation pathway did not show a mediation effect of engagement on attitude toward the website (b = -.125, S.E. = .11; BC -.370 CI .036), nor intention to use the website (b = -.123, S.E. = .09; BC -.321 CI .009). The serial mediation pathway through perceived scaffolding and engagement on the dependent variables attitude toward the website (b = .095, SE = .07, 95% CI [-.030, .244]) and intention to use the website (b = .094, SE = 0.06, 95% CI [-.001, .226]) were not significant either. Therefore H3a/B is not supported by the data. The mediation is not serial, but does only run through perceived scaffolding, meaning that if the interactive interface is considered benevolent and helpful to perform the task of writing it will result in a more positive attitude towards the website and a higher intention to use the website.

Figure 8. Serial mediation model with attitude toward the website as the dependent variable

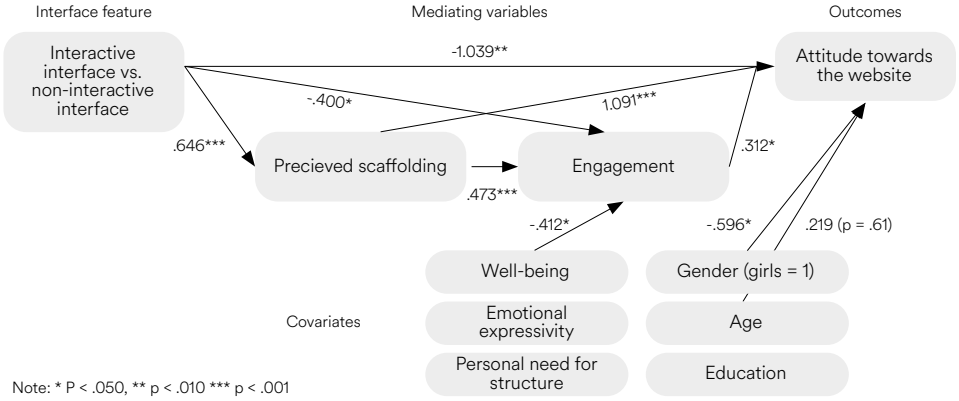
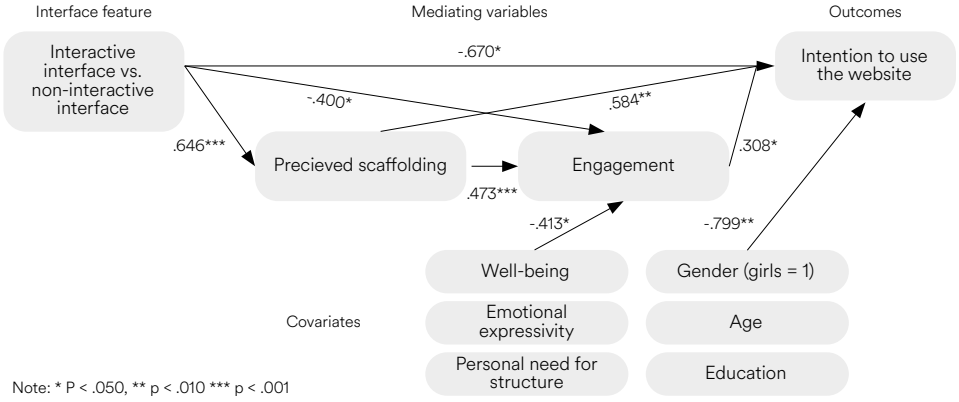


Figure 9. Serial mediation model with intention to use the website as the dependent variable



If we further look at the covariates in the model, we find that well-being was negatively related to engagement, meaning that participants with better well-being were less absorbed into the task of writing than participants with lower well-being, independent of the interface they used (b = -.413, S.E. = .17, p = 0.016; BC 95% CI [-.747 to -.080]). This may have to do with the difference in the severity of the stories these groups of participants are writing. Boys had a more negative attitude toward the website (b = -.596, S.E. = .29, p = 0.044; BC 95% CI [-1.174 to -.018]) and

a lower intention to use the website than girls (b = -.799, S.E. = .28, p = 0.005; BC 95% CI [-1.348 to -.250]). Finally, age, the level of education, emotional expressivity, and personal need for structure did not show any relation with the variables in our model. However, the relationship between age and attitude toward the website seems to approach the significance level, showing that older adolescents may have a more positive attitude toward the website (b = .219, S.E. = .12, p = 0.061; BC 95% CI [-.010 to -.448]). There were no further interaction effects between the variables.

Additional results

Content of the stories

We conducted quantitative content analysis and MANOVA analysis to measure the differences between the stories written in the interactive and non-interactive interface. In this analysis, we controlled for gender, age, level of education, general well-being, emotional expressivity, and personal need for structure. Apart from that, we also included perceived dialogue, perceived scaffolding, and absorption as additional covariates.

The participants in the study wrote on average 162 words (M = 161,98; SD = 124,30). Girls wrote significantly more words than boys (MD = 54.49, SD = 25.97, p = .039). Other personality factors did not seem to influence the length of the stories that were written.

When it comes to the specific contents of the narratives that were written, the results showed that girls wrote significantly more about the negative aspects of their distressing experiences compared to boys (MD = 1.20, SD = .42, p = .006). Participants with relatively higher general well-being wrote fewer negative aspects about their distressing experiences (MD = -.98, SD = .39 p = .012) and expressed less distrust in their coping strategies to deal with their distressing experience (MD = -.75, SD = .31, p = .016) compared to adolescents with relatively lower general well-being. Adolescents from general education study fields appeared to write significantly more on distrust in their coping strategies as well (MD = .81, SD = .37, p = .032). Finally, adolescents with a higher personal need for structure described significantly more coping strategies in relation to their distressing events (MD = .81, SD = .31, p = .009).

Participants in the non-interactive interface wrote significantly less about coping strategies in relation to their distressing experiences (MD = -1.96, SD = .41, p = .000). This difference was expected since the participants in the interactive interface were explicitly asked to reflect on their coping strategies. No other differences were found between the stories written in the interactive and non-interactive interfaces.

Use of the interfaces

If we look at the Interactive interface in more detail, we see that almost all participants filled in all input fields. Only 1 participant left the input field on coping strategies blank. In other words, the majority of participants followed up on the instructions given by the interactive interface that was provided to them.

Only 11 participants or 22% of the participants that used the structured interface made changes to their personal narrative in the 7th and last step (in this step, the website compiled the story, and the participants were asked to rewrite their story more fluently and add further details or questions if needed). Most of these changes included improving the fluency of the narrative. In just a handful of cases, more information was added (e.g., a question for the fictive audience) or information was removed (e.g., double information).

It is important to note that most of the participants that used the interactive interface, around 78%, did not make any changes to their personal narrative in the 7th step. As a result, the resulting narratives were visibly written less fluently than the narratives that were written in the non-interactive interface.

Evaluations of the interfaces

Finally, we looked at the written feedback we got from the participants. In total, 69 participants, or 63% of all participants provided written feedback about the website that was useful to evaluate the design, specific interfaces, and overall appreciation of the website. 61% of those responses generally approved of the website. For example, in 24 responses, participants had an overall positive opinion (e.g., “It was a good website.”; “I enjoyed using this website.”). In 20 responses, the participants complimented the website on its effectiveness, by explicitly saying that the use of this website meets its purpose (e.g, “I think many young people could be helped a lot by this website.”) or that they experienced positive effects as a result

of using the website (e.g., “It felt good to tell my story without anyone judging or interfering.”). Another 3 responses complimented the website on its overall ease of use. Only two responses were negative about the website, saying that the website was dull and boring or that it was not fun to use.

Participants also had a lot to say about the design of the website. 15 responses or 22% of all responses were positive about the design of the website (e.g., pretty or appealing design, calming colors, familiar and trusted appearance, heartwarming logo, appropriate design for young people). A total of five responses suggested optimizing the design of the website by adding more and brighter colors and more visuals.

A total of nine participants who used the interactive interface commented on the use of this interface. In five of these responses, the participants said that they believed the structured interface helped them to reflect on their experience (e.g., “The questions made it much easier to write my story.”). However, seven of those nine responses also contained a critical reflection on the structured interface. These participants found that the interface asked too many questions, that the interface was too intrusive, or that the questions were not specific enough. A total of five participants who used the non-structured interface had commented on the ease of use of this interface. No further comments were noted.

It is important to note some interesting suggestions were made by the participants that correspond with some key concepts explained by the TIME model (Sundar et al., 2015).

To begin with, participants expressed the need for more control over the use of the website and the structured interface through customization. For example, two participants noted that they thought writing about their experience was helpful, but that they would rather not share their narrative with an unknown audience. They suggested that users get the choice to share their narrative or keep their narrative to themselves. Another participant suggested that the website could tailor the structured interface to the needs of the writer using a pre-selection process: “It may be a good idea to make the questions more specific. For example, that you could choose what kind of problem or feeling you experience and ask other questions based on that.”.

Another participant expressed the need for relatedness, suggesting that the website could use an avatar to guide the user's actions: "It felt exactly like I was talking to something or someone. It might be an idea to make it seem like you are talking to a living thing by having an avatar ask the questions so that it feels more personal and so that you might want to say more about your problem.".

One participant suggested the need for more contingency on behalf of the website. The participant made a critical remark about the input field on coping strategies: "The question where you can say what you can do to deal with the problem does not seem a solution. I think that everyone can think about a solution, but sometimes it is just very difficult to do it yourself. I think it would be useful if the website itself came up with some tips on how to take those steps.". In other words, the interactive interface in this format, may not be experienced as contingent upon the prior input of this user.

Finally, one participant who made use of the non-interactive interface mentioned that although he believed in the usefulness of this website to some adolescents, he would not use a website with similar affordance since he dislikes writing. Previous research suggests that for interactivity to work best, it is important that users experience fun in using the interface, which may increase their motivation to use the website and how much they interact with the content (Oh & Sundar, 2015). This raises some questions for further research that we will discuss in the next section.

Discussion

General discussion of the results

In this study, we tested the applicability of an interactive interface on a fictitious peer-topeer support website for adolescents. We used the principles of the Theory of Interactive Media Effects (TIME) by Sundar et al. (2015) as our main theoretical framework to examine how young people perceive a peer-to-peer support website with an interactive interface and how this relates to the attitude toward the website and the intention to use the website in the future.

This study retrieved some interesting results. In correspondence with our hypotheses, participants found that the interactive interface scaffolded them

through the process of writing. In other words, they experienced that the interactive interface was helping them to write their story and that this feature showed the benevolence of the website more than the non-interactive interface. However, contrary to our hypothesis, the interactive interface did not lead to higher engagement or absorption into the task of writing than the non-interactive interface. It is possible that, although the participants had the feeling that the interactive interface was helping them to write their story, the actual steps that were presented by the interactive interface may not have led to deeper engagement in the task of writing. It is possible that the multitude of questions disrupted their flow of writing and that another sort of interactive interface may work better to keep their focus on the task of writing.

Concerning our hypothesis on a serial mediation effect of perceived scaffolding and engagement, we found that only perceived scaffolding mediated the relation between the interactive interface and the dependent variables. Thus, participants who perceived the interactive interface as scaffolding them through the task of writing, found the interactive interface helpful and found this feature showed the benevolence of the website, had a more positive attitude toward the website and were more inclined to use a similar peer-to-peer support website with the same features in the future. On the contrary, engagement with the website did not mediate the effects on attitude toward the website and intention to use the website. The serial mediation analyses, through perceived scaffolding and engagement, were therefore not supported.

Surprisingly, the results showed that the interactive interface in itself had a negative effect on attitude toward the website and intention to use the website. These results merit more explanation. Although it is thought that interactivity facilitates communication between the user and the medium, previous research has also argued that high levels of interactivity can cause cognitive overload and therefore result in adverse effects (Xu & Sundar, 2016). Since writing a personal story about a distressing event may already be a highly cognitively demanding task for adolescents, additional questions about their experiences may have felt like a cognitive overload or burden. Moreover, the language that was used to describe the writing instructions resembled the language that would be used in a therapeutic setting. This may have not been entirely suited for adolescents. This may not only

have affected engagement negatively but may have directly resulted in an negative effect on the attitude toward the website and a lower intention to use the website.

Taking together these results, we can conclude that these results are indicative of a suppression effect. Unless participants found that the interactive interface scaffolded them through the task of writing, helped them in writing their story, and showed the benevolence of the website, the interactive interface would negatively affect their attitude toward the website and intention to use the website. This shows that perceived scaffolding of the interactive interface is an important factor in the acceptance and use of the interactive interface by adolescents.

This suppression effect was also reflected in the written feedback provided by some of the participants. Some participants said that the interactive interface asked too many questions or was too intrusive. Although the structured interface did not force participants to provide text to every question or input field, participants may still have felt obliged to fill in every input field. Other participants found that the questions were not specific enough and expressed a need for more customization or personalization of the writing instructions. Laranjo et al. (2018) explain that dialogue systems, such as the interactive interface we tested in this study, may differ in terms of dialogue management (i.e., degree of interactivity between the user and the system; either fixed or flexible) and dialogue initiative (i.e., led by the user or the system). The recommendations expressed by the participants reflect a need for an interface that is more flexible and lends more opportunity to the user to steer the course of the conversation. Natural language processing techniques (NLP), making use of machine learning to understand and generate text messages in an automated manner, could be used in this context to make the responses by the website more contingent upon the prior input of the user (Calvo et al., 2017; Khurana et al., 2022).

The results also showed interesting gender differences. Boys seemed to have a more negative attitude toward the website and a lower intention to use the website in the future compared to girls. Boys also wrote significantly fewer words than girls, regardless of the interface they were using. Previous qualitative research already showed that boys are less likely to use mental health apps in general (Kenny et al., 2016). Other studies suggested that boys may find it harder to express their

thoughts and feelings or may dislike writing about them (Travagin et al., 2015). One male participant in our study specifically stated in the open question that he would not like to use our website because he disliked writing.

Although this effect was not significant, older adolescents seemed to have a slightly more positive attitude toward the website. Meta-cognitive abilities to reflect on distressing experiences effectively are still developing during adolescence and older adolescents in this sample may have had a slightly higher advantage over younger adolescents on that matter (Berk, 2014; Conover & Daiute, 2017; Skinner & Zimmer-Gembeck, 2016). As a result, older adolescents may be more positive about writing about emotional experiences and see more benefits in doing so. Therefore, the website may have appealed more to older adolescents. More research is needed to test for age differences in the use of peer-to-peer support websites.

Well-being affected how adolescents experienced the use of the website and what they wrote in their narratives. Adolescents with lower well-being wrote significantly more about the negative aspects of their experience and expressed more distrust in their coping strategies. These participants were also less absorbed into the writing task compared to participants who had higher general well-being. As explained earlier in this discussion, writing a personal story about a distressing event may be a highly cognitively demanding task for adolescents, even more so for adolescents who have generally lowed well-being. Writing may have elicited more negative emotions and thoughts in these adolescents and may have distracted them from the writing task.

Our analyses did not show an effect of other personality traits, such as personal need for structure or emotional expressiveness, on any of the variables included in this model, meaning that participants' appreciation of the interactive interface and the website in general did not depend on these personality characteristics. More research is needed on who likes or dislikes the use of an interactive interface as we tested in this study. However, the results did show that young people with a higher personal need for structure wrote more about coping strategies in general. Thus, although these personality characteristics may not influence their judgement of these platforms, they may influence the way they write personal stories on these platforms.

In the written feedback that we received from 60% of the participants, the website as a whole and the structured interface more specifically, were positively evaluated. Apart from some critical but useful remarks on the structured interface, participants believed that the structured interface was giving them the needed support in writing their narrative.

Practical implications

This study provides useful suggestions for designers of peer-to-peer support websites for adolescents. Peer-to-peer support websites and other platforms for online support provision should make it as easy as possible to share one's personal stories and help users in doing so. Based on the results of this study, we can recommend implementing an interactive interface to support communication with the website and reflection on behalf of the user or experimenting with other types of interactive interfaces that serve the same goal. Nevertheless, the findings of this study suggest that when implementing these type of interactive interface features, it is important to assure that the interface feature is regarded as helpful by users and show the benevolence of the website. If not, such interfaces may distract from the actual task of writing, resulting in adverse effects on engagement, attitudes toward the website, and intentions to use the website. Therefore, we recommend involving users' perceptions in the design of these interface features and sufficiently testing their applicability before implementation.

Limitations and further research

This study also has some limitations that need to be mentioned. To begin with, participants in this study were familiar with the concept of a peer-to-peer support website, but most of them did not use a peer-to-peer support website before. This may have influenced the results on the main dependent variables. It could be interesting to replicate this study with a sample that is already familiar with the use of peer-to-peer support websites and compare these results to the current study.

Although the manipulation check of our experimental conditions had worked, the participants did not seem to experience a significant difference in interactivity level between the two conditions. One explanation could be that the limited interactive elements in the non-interactive interface – in this case, having to click multiple times to go from one block to the other - may already have been sufficient for participants

to experience some form of dialogue with the website. Therefore, further research is necessary to experiment with different degrees of dialogue management and initiative as discussed by Laranjo et al. (2018), therefore improving the stimulus material for testing an interactive interface on a peer-to-peer support website.

The measurement for engagement reflected general engagement with the use of the website and was not specified to the interactive or non-interactive writing page on the website. This may explain the non-significant results for engagement and the writing pages. If this study were replicated, it could benefit from a measurement for engagement that would measure engagement with the writing page instead of general engagement with the website.

We were unable to identify the underlying mechanisms and personal differences explaining why some participants found the interactive interface helpful whereas others did not. Further research should make it their goal to explore in more depth the role of personal differences and preferences for certain interface characteristics. As suggested by previous research, the enjoyment of interactive features may contribute to the most favorable effects (Oh & Sundar, 2015). Our study results and previous research suggest that gender differences and preferences for interactive features may need further attention (Huang et al., 2021; Kothgassner et al., 2018).

We did not analyze whether the interactive interface design helped young people to reflect more effectively on their experiences, but merely questioned young people's attitudes toward the website and intention to use the website as a result of the interface they used. Although previous research on this topic has shown that writing instructions and prompts on social (support) media result in positive changes in emotional well-being (e.g., Fitzpatrick et al., 2017; Lee et al., 2016), we cannot conclude that this was also the case for the interactive interface that was tested in this study. Scholars suggest not only to study how interactive features of media are perceived, but also to investigate the cognitive changes as a result of using these features (Yang & Shen, 2018).

Building on these limitations and the goal of the current study, we suggest further research to expand on our current study by testing the applicability of other interactive interface features that could help adolescents to reflect on their experiences and

help them write personal stories on peer-to-peer support websites. Special interest should be given to the influence of personal differences and preferences for certain interface characteristics Furthermore, we suggest further research to incorporate measures to examine whether participants experience positive changes in their emotional well-being as a result of these interactive features.

Conclusion

A fictitious peer-to-peer support website for adolescents was used to test the applicability of an interactive interface design by analyzing participants' perceptions, engagement, attitudes toward the website and intention to use the website. Our results are indicative of a suppression effect, meaning that users may resent the use of an interactive interface if they do not perceive the feature as scaffolding them through the process of writing. By all means, an interactive interface should always serve the purpose of supporting reflection and writing, rather than distracting from the writing task. If not, this may result in adverse effects on engagement, attitudes toward the website and intentions to use the website. This study may be interesting to developers of peer-to-peer support websites that look for a way to support adolescent users in making their contributions to the website.

GENERAL DISCUSSION AND CONCLUSION

Main findings of the empirical chapters

Writing on peer-to-peer support websites does not always contribute to coping self-efficacy

In chapter 1 we explored the relationship between social support motives to use personal narratives on peer-to-peer support websites (i.e., information seeking about a question or problem and emotional support seeking from similar others), actions (i.e., experiences with writing, reading, responding to personal narratives) and adolescents' belief in the usefulness of these websites for their confidence in coping with stressful events (i.e., increase in coping self-efficacy).

We meant to answer the following research question:
RQ: What is the relationship between specific actions (i.e., experience with writing, reading, responding to personal narratives) social support motives, and coping self-efficacy after using peer-to-peer support websites?

The study results showed that young people's social support motives to use these websites were positively correlated with positive changes in coping self-efficacy. Reading and responding were not directly related to changes in coping self-efficacy. The most important finding of this study was that adolescents who used peer-to-peer support websites to write and share their personal narratives found that the use of these websites did not contribute to their overall sense of coping self-efficacy. However, an interaction effect between an emotional support motive and writing showed that this negative effect was reversed and became positive when users shared their personal narrative to get emotional support from similar others.

As previous research suggested, the emotional support users find on these websites is important for users to experience the positive effects of sharing their personal narrative, especially if that support comes from people that feel similar to themselves (e.g., Welbourne et al., 2013). In this case, it resulted in a positive increase in confidence in coping (i.e., coping self-efficacy). It seems like writing and sharing for informational support purposes did not result in the same positive effects. It is possible that these users did not get the social support response

that they wished for (e.g., emotional support, instead of informational support) or thought that peers generally do not give reliable informational support on dealing with a stressful situation to strengthen their coping self-efficacy.

Altogether, the question remained why writers experienced negative effects in the first place and how we could counter these possible negative effects. This had led us to zoom in more on the effects of writing a personal narrative on a peer-to-peer support website and the role of writing instructions and interface design adaptations in chapters 2 and 4.

Writing instructions may change appraisals about distressing events

In chapter 2 we tested whether specific writing instructions based on expressive writing theory, could change young people's appraisals of a distressing event and improve young people's emotional reactions and coping self-efficacy concerning the events. More specifically, we gave adolescents and young adults different expressive writing instructions to write about their experiences in relation to the COVID-19 pandemic in two online experiments (one in the early Spring of 2020, the other in Winter of 2020).

We meant to answer the following research question:
Can different expressive writing instructions focused on changing primary and secondary appraisals of a stressful event affect young people's emotional reactions to the stressful event in question (e.g., the COVID-19 pandemic)?

In the first study, we found that young people who were asked to write about emotions, thoughts and positive aspects about the distressing events, experienced a direct positive change in their emotional responses in relation to the events. Young people that were asked to write on emotions, thoughts, and previous effective coping strategies did not experience a significant effect on their emotional responses concerning the negative event. These findings were not mediated by the contents of the narrative that was written (i.e., the relative use of positive emotions, aspects, and expressions on (dis)trust in coping).

The second study contradicted the first study. We found that young people who were asked to write on emotions, thoughts, and positive aspects about the distressing events, did not experience a significant change in their emotional responses in relation to the events. However, these young people experienced a negative change in relation to their coping self-efficacy to deal with the events at hand. Once again, these findings were not mediated by the contents of the narrative that was written (i.e., the relative use of positive emotions, aspects, and expressions on (dis)trust in coping). Young people that were asked to write on emotions, thoughts, and effective coping strategies concerning the distressing situation at hand did not experience a direct change in emotional responses or coping strategies in relation to the events. However, those young people who wrote about the positive aspects in relation to the events without being asked to do so experienced a positive change in their coping self-efficacy in relation to the distressing events.

In relation to our primary research question, we concluded from both studies that writing instructions supporting users in writing their personal narrative indeed affect not only what young people write, but also affect their emotional responses and coping self-efficacy in relation to the events that are described. In line with previous research, we found specifically that stimulating young people to write on the positive aspects may be beneficial to increase positive emotions and possibly coping self-efficacy. We could not find the same support for writing instructions to write about successful coping strategies.

Reading about narrators' confidence in coping affects the reader in a positive way

In chapter 3 we started with narrative persuasion theories to test how reading others' personal narratives on peer-to-peer support websites may affect readers' emotions and coping self-efficacy in relation to similar distressing events. More specifically, we compared the effects of a narrative in which the narrator shows high or low confidence in coping with the difficulties resulting from the COVID-19 pandemic on readers' emotions and coping self-efficacy in relation to the same distressing event.

We wanted to answer the following research questions:
How do high and low coping self-efficacy narratives affect young readers' emotions and coping self-efficacy in relation to a stressful event? And what is the moderating role of identification and similarity?

The results showed that reading a high coping self-efficacy narrative, portraying a young person who generally felt good in coping with the difficulties they experienced as a result of the COVID-19 pandemic, resulted in a higher increase in positive feelings than reading a low coping self-efficacy narrative. There were no direct differences found for change in coping self-efficacy as a result of reading these personal narratives. However, those who experienced more similarities between their own situation and the situation of the narrator did experience a significant change in coping self-efficacy after reading the narratives. More precisely, those participants who read a narrative in which the narrator showed high confidence in coping with the difficulties resulting from the COVID-19 pandemic and saw many similarities between their own experiences and those of the narrator experienced a positive change in their coping self-efficacy and thus felt more confident in coping with the difficulties resulting from the COVID-19 pandemic after reading the narrative. In the same way, those participants who read a narrative in which the narrator showed low confidence in coping with the difficulties resulting from the COVID-19 pandemic and saw many similarities between one's own experiences and those of the narrator experienced a negative change in their coping self-efficacy and thus felt less confident in coping with the difficulties resulting from the COVID-19 pandemic after reading the narrative.

To answer our research questions, we see that our findings are fairly consistent with previous literature on narrative persuasion, showing the persuasive effects of narratives. More precisely, personal narratives of others can affect readers' emotions and coping self-efficacy accordingly. For the narratives we used in this study, it seems like similarity was the most important moderating variable explaining the effects of the narratives on coping self-efficacy.

The importance of acceptance of writing instructions

In chapter 2 we did not test the applicability of these writing instructions in the context of a peer-to-peer support website. In chapter 4 we, therefore, looked at the applicability of an interactive interface design to support adolescents' writing within the context of a fictitious peer-to-peer support website. By using the Theory of Interactive Media Effects (TIME) by Sundar et al. (2015) we compared the use of an interactive interface, in which the user is presented with specific questions to elaborate on their experience and to write their personal story in a step-by-step manner, with a non-interactive interface that closely resembles the interface of a forum on a peer-to-peer support website. A fictitious peer-to-peer support website was developed for this study.

We aimed to answer the following research question:
How do adolescents experience the use of the interactive interface on a peer-to-peer support website? And how does this affect their attitude toward the website and intention to use the website in the future?

In line with our hypotheses, the study showed that the interactive interface design resulted in higher perceived scaffolding, or perceived helpfulness and benevolence of the interface. Thus, participants perceived the interactive interface as more helpful than a non-interactive interface design. Perceived scaffolding, in turn, mediated the effects of the interactive interface on attitude toward the website and intention to use the website in the future. Participants who perceived the interactive interface as scaffolding them through the task of writing, perceived higher engagement and had a more positive attitude toward the fictitious website, and were more inclined to use a peer-to-peer support website with similar features in the future.

However, those participants who did not perceive the interactive interface as scaffolding them through the task of writing, perceived lower engagement and had a more negative attitude toward the fictitious website, and were less inclined to use a peer-to-peer support website with similar features in the future. We concluded that the results were indicative of a suppression effect. In other words, adolescents

may resent the use of an interactive interface if they do not perceive the feature as scaffolding them through the process of writing, resulting in adverse effects. These findings show that perceived scaffolding of the interactive interface is a crucial factor in the acceptance and use of similar interactive interfaces by adolescents. Unfortunately, we were not able to identify the personal differences that predicted the acceptance of an interactive interface.

To answer our research questions for this study, we can conclude that adolescents had a mixed experience with the interactive interface and that the interface did not result in an overall positive effect on attitude and intentions for use as we had expected. The written feedback from some participants reflected a need for an interface that is more flexible and lends more opportunities to the user to steer the course of the conversation. Perceived scaffolding seemed to be a crucial factor in the positive effects that were found. We proposed that natural language processing techniques (NLP), making use of machine learning to understand and generate text messages in an automated manner, could be used in this context to make the writing instructions by the website more contingent upon the prior input of the user. We will discuss the application of NLP techniques later in this discussion.

In this Ph.D. project, we did not intend to go into detail about social support responses provided by users of peer-to-peer support websites. Nevertheless, the peer-to-peer support responses written underneath a personal narrative may inform readers too. Previous research has pointed out that there is not a lot of research on how reading peer-to-peer support responses provided by others to others may affect readers (Malloch & Zhang, 2019). We found only one paper that has looked into these effects from the perspective of narrative persuasion theories, which posited that similarity with the situation presented in the narrative would lead readers to identify more with the writer and, as a result, make the peer-to-peer support responses to those narratives more relevant to read (Malloch & Zhang, 2019). For that reason, readers could also learn from others' social support responses and these messages should therefore be considered when applying narrative persuasion theories on peer-to-peer support websites (Malloch & Zhang, 2019). This could be a promising avenue for further research.

Table 4. Chapter overview with conclusions

	Chapter	Research questions and main findings
Exploratory study	Chapter 1	RQ: What is the relationship between specific actions (i.e., experience with sharing, reading, responding to personal narratives) social support motives, and coping self-efficacy after using peer-to-peer support websites? **Adolescents who used peer-to-peer support websites to write and share their own personal narratives found that the use of these websites did not contribute to their overall sense of coping self-efficacy. However, an interaction effect between an emotional support motive and writing showed that this negative effect was reversed and became positive.**
Writing personal narratives	Chapter 2	RQ: Can different expressive writing instructions focused on changing primary and secondary appraisals of a stressful event affect young people's emotional reactions to the stressful event in question? **Writing instructions supporting users in writing their personal narrative indeed affect not only what young people write, but also affect their emotional responses and coping self- efficacy in relation to the events that are described. Stimulating young people to write on the positive aspects may be beneficial. We could not find the same positive effects for writing about successful coping strategies.**

	Chapter	Research questions and main findings
Reading personal narratives	Chapter 3	RQ: How do high and low coping self-efficacy narratives affect young readers' emotions and coping self-efficacy in relation to a stressful event? RQ: What is the moderating role of identification and similarity? **Narrators' high and low coping self-efficacy may affect readers' emotions in a positive and negative way. Similarity was a moderating variable explaining the effects of the narratives on coping self-efficacy.**
Interfaces	Chapter 4	RQ: How do adolescent users of a peer-to-peer support website experience the use of writing instructions? RQ: And how does this affect their attitude toward the website and intention to use the website in the future? **Adolescents had a mixed experience with the interactive interface. Therefore, the interface did not directly result in positive effects on attitude towards the website and intention to use the website. Perceived scaffolding seemed to be a crucial factor in the positive effects that were found. The written feedback reflected a need for an interface that is more flexible and contingent upon the prior input.**

Practical implications

Peer-to-peer support websites: Writing instructions and reading content matter

This dissertation proposed a narrative perspective on the writing and reading of personal narratives on peer-to-peer support websites for young people and how the interface design of these websites can be adapted to that perspective. From this perspective, we conclude that the way young people write about their personal experiences and the content of personal narratives they read of others on peer-to-peer support websites can affect young people's emotional coping self-efficacy and well-being, independent of the social support responses that are exchanged between users. The findings of this dissertation lead to practical implications that are of use to designers of peer-to-peer support websites for young people. These were described in more detail in the different chapters. Here we will summarize what practical tips designers of peer-to-peer support websites for young people can take away from this dissertation.

In general, we conclude that writing instructions and interface adaptations may help young people to reflect and write more effectively on distressing experiences on peer-to-peer support websites. Especially writing instructions and interface adaptations that help young writers to focus more on the positive sides of their experiences – alongside writing about emotions and thoughts related to distressing experiences – may help them to reappraise negative experiences for the better. The writing instructions and interface adaptations tested in this dissertation may be a good starting point. Young readers may in turn benefit from reading more positively framed narratives as well, especially if the described events align with their own experiences. Moreover, showing more positively framed narratives on peer-to-peer support websites may prevent readers from reflecting in an overly negative way about their own experiences as well, therefore breaking the cycle of a negativity bias on peer-to-peer support websites that may result in negative effects to both writers and readers.

In this Ph.D project we focused on writing at one fixed time. Nevertheless, we cannot dismiss the convincing evidence for the positive effects of writing about distressing experiences for multiple times and from multiple different perspectives.

A recent meta-analysis on expressive writing specifically stressed once again the importance of writing multiple times about a distressing situation in a short period of time (within 1 to 3 days), because "a short interval between writing sessions functions to keep the momentum going while preventing people from dwelling on the same event and spiraling down into repetitive thoughts" (p. 18, Guo, 2022). The authors also stressed the importance of encouraging people to explore different aspects of their experience instead of merely repeating the same aspects of it (Reinholds et al., 2017). Most importantly, young people should be encouraged to find new meanings in the distressing event with each writing session (Guo, 2022). The moment that users come to peer-to-peer support websites to reflect and write on their distressing experiences, could be the perfect momentum for young people to keep reflecting on those experiences with more depth and in a constructive manner and prevent them from ruminating about the experience as soon as they leave the online community.

What could peer-to-peer support websites exactly do to support this process? We suggest peer-to-peer support websites to provide the affordance to keep a diary on the platform, so that users can keep track of their writings. A diary feature could complement the affordance of a forum, since it may lend writers the opportunity to share their personal narratives directly with the community or keep them to share with the community on a later occasion when they feel ready for it. Writing in diary form has already proved its effectiveness in other online mental health tools (e.g., Metsäranta et al., 2019). It should be studied whether this is also a feature that would be appreciated by users of peer-to-peer support websites.

Despite these interesting results, it is important to note that writing instructions and interface adaptations should always serve the purpose of stimulating rather than restricting young people to write in more depth about their personal distressing experiences. It is important not to force a form of toxic positivity and therefore cause backfiring effects. In the same way, we do not mean to state that all too negatively framed narratives on peer-to-peer support should be removed. After all, the ultimate goal of a peer-to-peer support website is to be a safe space where young people can share the negative and the positive without too many restrictions, but in a way that is most effective for both writers and readers.

Social networking sites: Writing and reading personal narratives

In this Ph.D. project we mainly focused on writing and reading personal narratives on peer-to-peer support websites for young people for the reason that these websites are specifically designed to share personal narratives about distressing events. However, the theories we applied and the findings of our research and our research findings can be applied to other contexts as well.

Sharing personal narratives and finding social support has also been studied on popular social networking sites, such as Instagram (Andalibi et al., 2017). This study found that apart from shorter posts about people's emotions and thoughts, some users also disclosed personal narratives in which people disclosed in more width and depth about what they think, feel, and go through, accompanied by an image. Once again, this study mainly seemed to focus generally on what type of social support responses these posts get (e.g., positive or negative, emotional or informational support, etc.; Andalibi et al., 2017). It would be interesting to apply the narrative perspective that we used in this Ph.D. project to see what effect sharing and reading those posts has on users.

Moreover, the audio-visual component of social networking sites may add another layer to the effects of writing and reading personal narratives on these platforms. Meta-analytic research on narrative persuasion is not conclusive yet on the effect of the medium of the narrative (e.g., either written text, audio, video, or a combination of 2 or more; Braddock & Dillard, 2016; de Graaf et al., 2016; Shen et al., 2015). It was suggested by other meta-analytic research that the medium and content of the narrative may interact with each other leading to differential effects dependent upon the context in which narratives are studied and the dependent variables that are studied (Perrier & Ginis, 2018).

Theoretical contributions

This dissertation proposed a narrative perspective on the writing and reading of personal narratives on peer-to-peer support websites for young people and how the interface design of these websites can be adapted to that perspective. To come to this perspective, we applied different theories to a new context to which they are not often applied. Doing so does not only enrich our knowledge about the

uses and effects of personal narratives on peer-to-peer support websites for young people but also the applied theories themselves. In what follows, we reflect on our contributions to each of the main theories we applied in this Ph.D. project.

Expressive writing theory

First of all, we were able to show that expressive writing theory may be an effective short-term intervention for young people with varying degrees of emotional well-being. Research on expressive writing has mostly been studied as a complementary part of psychotherapy for people with (mental) health issues or generally lower emotional well-being. Because of this, its main focus has been to measure its long-term effects on psychological well-being (such as symptoms of depression, anxiety, etc.). In this Ph.D. project we were able to prove that expressive writing also has short-term effects on people's emotional responses and coping self-efficacy in relation to specific distressing events. Moreover, these effects were not dependent upon people's initial emotional well-being.

Secondly, we were able to show the applicability of expressive writing for young people. The principles of expressive writing theory have not often been studied with young samples. Only one meta-analysis proved that the effects of expressive writing for adolescents were significant, yet small compared to adults (Travagin et al., 2016). In this Ph.D. project, we could add to those findings that expressive writing did in fact affect young people's appraisals of a specific distressing event, even in the short term.

It was suggested by previous research that writing instructions may be advised for young people. In this Ph.D. project, we further built upon those premises by comparing different writing instructions for young people. We examined the effectiveness of a positive writing instruction and a coping writing instruction. Previous positive writing instructions had mainly focused on writing exclusively about positive experiences related to a distressing event (e.g., Crawford et al., 2017; Facchin et al. 2014; Lichtenthal and Cruess, 2010; McCullough et al., 2006) or writing about positive events (Baikie et al., 2012; Burton & King, 2004). However, for the purpose of peer-to-peer support websites, we believe this is not the most desired approach. It was shown that a balance between the positive and the negative may important when writing a personal narrative. Thus, in this study, we meant to examine the effectiveness of a positive writing instruction that asks young

people to write both about the negative aspects and the positive aspects of their distressing experience. We found that our version of the positive writing instruction may indeed be beneficial to young people's emotional well-being and coping self-efficacy. The effectiveness of writing instructions focused on coping strategies had not yet been studied with young samples. Unfortunately, we failed to measure any positive effects resulting from that writing instruction.

We approached expressive writing from a new methodological perspective. Previous research often uses Linguistic Inquiry and Word Count (LIWC) (Pennebaker et al., 2015) to examine the effects of the writing content. Using this technique, scholars can examine to what frequency people use certain words in their text and with what effects. Although this is an interesting and effective approach, we chose to look at the content of personal narratives from an interpretative point of view. The purpose of our quantitative content analysis was not merely to examine the specific words young people used in relation to the events (e.g., emotions, cognitive wording, etc.), but to understand the interpretation they give to the distressing events (e.g., positive/negative aspects and consequences, (dis)trust in coping). We advise further research to combine both Linguistic Inquiry and Word Count (LIWC) and interpretative quantitative analyses in the following studies on the uses and effects of expressive writing theory.

Theory of interactive media effects (TIME)

The Theory of Interactive Media Effects (TIME) had previously been implemented to test the effects of cues, or mere visual aids, in the context of online health communities and peer-to-peer support websites (e.g., Kim et al., 2018; Li et al. 2015). Actions and their effects had been studied less in this context. In this dissertation, we applied the action route of TIME to the context of peer-to-peer support websites. Our most important contribution is that we found that perceived scaffolding may be a crucial mediating variable for the acceptance and use of the interactive interface by adolescents. The results were indicative of a suppression effect, meaning that adolescents may resent the use of an interactive interface if they do not perceive the feature as scaffolding them through the process of writing, resulting in adverse effects. Higher perceived scaffolding had a direct positive effect on engagement with the website as well as on the attitude towards the website and intention to use the website in the future.

Narrative persuasion theories

Whereas previous research on narrative persuasion had mainly focused on the influence of narratives for persuasion purposes (e.g., entertainment education, health communication), we applied narrative persuasion theories to a new context, namely personal narratives that can be found on peer-to-peer support websites. It had not often been applied to this context before.

Narrative persuasion has mostly been implemented in interventions to persuade people to perform a certain health behavior. In this dissertation, we found that narratives that are not created to persuade people, such as the personal narratives that can be found on peer-to-peer support websites, may affect emotions and beliefs related to themselves as well. More specifically, we found that the personal narratives of others may affect readers' emotions and coping self-efficacy in relation to similar distressing experiences. We found that narrators' self-efficacy beliefs may influence readers' emotions and self-efficacy beliefs. The effect of portrayed self-efficacy, and coping self-efficacy more specifically, has not been studied frequently in the narrative persuasion literature.

Finally, previous research on narrative persuasion has mainly looked at the effects of narratives on adult samples. In this dissertation, we applied narrative persuasion theory to a young sample (i.e., young adults between 18 and 25 years old). Unfortunately, we did not study narrative persuasion with adolescents (14 to 18 years old). This remains an avenue for further research.

Limitations and recommendations for further research

In the different chapters, we explained the limitations of our studies and recommendations for further research. Taking together these different limitations and suggestions, we can give some more general recommendations.

Involve both the target group and the platforms

We suggest involving both the target group as well as the platform as much as possible in the development of specific interface adaptations for peer-to-peer support websites.

The fictitious peer-to-peer support website that we used in chapters 4 was co-developed with the help of bachelor students of our study program. We believe this may have helped to make a website that was appealing to the target group. Furthermore, we also asked young people to provide written feedback on the use of our fictitious peer-to-peer support website. This study showed that young people had interesting and feasible ideas to tackle their needs about sharing a personal narrative through interface design adaptations.

Further research could use a co-design method to explore, implement, test, and evaluate young peoples' design expectations and suggestions. For both theoretical and practical matters, this may help to explore young people's expectations in more depth, exclude the influence of poor looks on hypothesis testing and ultimately develop a website that is more likely to be used by young people. A co-design method has been previously used to involve young users in the development of (mental) health interventions, such as mobile mental health applications (Aryana et al., 2018). We only found one study that used this approach with adolescents and young adults for peer-to-peer support websites that gave insight into specific design expectations and solutions, such as the need for a reward system to promote user interaction (Griffiths et al., 2015). Although previous research found that interactions with other people on these platforms are a valuable affordance, no research has devoted attention to users' actual expectations concerning that feature. Therefore, using a co-design method for this research question is a very interesting avenue for further research.

There is also an important role for the platforms themselves. Throughout the process of this dissertation, the help of existing peer-to-peer support websites was regularly enlisted to distribute the questionnaires to their users by posting a message on their platform. Although these platforms were always willing to help, they take the anonymity and user experience of their users seriously and were limited in their ability to distribute a call for participation. Nevertheless, there are more ways for researchers to get peer-to-peer support websites actively involved in this research topic. As researchers on this topic, our task is to create opportunities to learn from each other and consult peer-to-peer support websites about the practical application of the design modifications we suggest. After all, these suggested modifications are only as feasible as the extent to which the platforms

are convinced of their usefulness and able to implement them. Further research on this topic should try to involve peer-to-peer support websites more in the research process. Test both the acceptability and efficacy of writing instructions and interface design adaptations.

When testing writing instructions and interface design adaptations in the context of peer-to-peer support websites it is important to test both their acceptability and efficacy (Yang & Shen, 2018). For practical reasons, such as feasibility and time limitations, we chose to research the acceptability and efficacy of the writing instructions and interface adaptations in different studies. For example, in chapter 2 we could only speculate on the reasons why the positive writing instruction resulted in adverse effects among participants, and it would have been useful to know participants' perspectives on these instructions in the context of a peer-to-peer support website. In chapter 4 we chose to focus on the general acceptability of a structured interface, but we did not include measures of its effects on emotional well-being and coping self-efficacy in relation to the distressing events that were described. If time and resources allow, we recommend tackling both questions in one study to assure both the acceptability and efficacy of the design features that are studied. The TIME model we used in chapter 4 lends itself to tackling both at the same time.

Study the influence of demographic and personality differences

This dissertation focused on young people, both adolescents and young adults, as its main target audience. Because of practical considerations, the various empirical chapters used different samples (i.e., either adolescents or young adults or both at once). The inconsistency in sampling is a limitation that should certainly be acknowledged. Therefore, in subsequent research, we recommend using greater homogeneity in the samples across different empirical studies.

Having greater homogeneity in sampling across different empirical studies, will also make it easier to explore in more depth the influence of demographic and personality differences in relation to the effects of writing instructions and design adaptations on peer-to-peer support websites.

In our empirical chapters, we explained how gender and age may affect uses of, and attitudes toward, peer-to-peer support websites, preferences for social support, reasons for sharing personal narratives, and preferences and needs for certain interactive features. In chapter 4 we found that boys evaluated the fictitious peer-to-peer support website less positively and were less likely to make use of the peer-to-peer support website (with or without an interactive interface) in the future compared to girls, suggesting there are indeed gender differences involved in the use and acceptance of a peer-to-peer support website.

We could not find any age differences in our studies. However, Flanders' most used peer-to-peer support websites 'Awel.be' and 'watwat.be' claim in their mission statements to address, respectively, young people between the ages of 6 and 25 years old and 11 and 25 years old. Without disclaiming the widespread use of these websites and efforts made by their teams, it seems unlikely that children (approx. 6 to 11 years old), adolescents (approx. 12 to 18 years old), and young adults (approx. 18 to 25 years old) hold the same affordances and design expectations for a peer-to-peer support website.

Furthermore, we also controlled for differences in general well-being, emotional expressiveness, and personal need for structure in our empirical studies. Apart from some differences related to general well-being, we could not find any effects of other personality factors on the effects of writing and reading personal narratives on peer-to-peer support websites. For example, a cross-sectional study with an adolescent sample showed that loneliness and insufficient offline social support were correlated with a preference for online social interaction and support-seeking (Leung, 2011). Research in the context of social networking sites showed that online self-disclosure and online support-seeking were done more by those who felt disconnected from others (Hollenbaugh & Ferris, 2014) and those with higher levels of anxiety (Chan et al., 2021). Further research should make it a priority to detect demographic and personality differences in the use, effects, and expectations of writing instructions and design adaptations on peer-to-peer support websites.

Study the influence of situational factors

Apart from demographic and personality differences, we believe there is not enough research on the influence of situational factors in relation to writing and

reading personal narratives on peer-to-peer support websites. More precisely, we think it may be interesting to adapt writing instructions and interface adaptations to differences in coping styles and motives for sharing personal narratives.

First of all, we believe it may be interesting to look deeper into the differential effects of coping styles. At the beginning of this Ph.D. project, we considered the effects of personality differences in coping styles between young people. However, from a transactional perspective on coping, we concluded that coping may not stem from personality differences per se, but rather from situational factors, including personal resources and the situation at hand. It is generally understood that emotion-focused coping strategies are advised when the distressing event is out of one's control, whereas problem-focused strategies are most effective when someone can exert control over the event in question (Lent, 2004). For writers, it may be interesting to examine the interaction effects between the relative controllability of the distressing situation at hand (i.e., relatively high control vs. relatively low control) and writing instructions or interface design adaptations that differ according to their primary function (i.e., emotion-focused vs. problem-focused). In the case of reading personal narratives, it may be interesting to examine how personal narratives in which the narrator uses different coping styles (i.e., emotion-focused vs. problem-focused), may affect readers' own emotions and coping self-efficacy in relation to the distressing event in question.

Secondly, we believe it may be interesting to adapt writing instructions or interface design adaptations to the motives young people have for sharing personal narratives. Research on the social sharing of emotions and online self-disclosure suggests that young people may have different reasons for sharing their emotional experiences with others (Duprez, 2015). Social support seeking is only one of them. It is suggested by previous research that different reasons for sharing one's emotional experiences create different design expectations (Rodríguez Hidalgo et al., 2015; Yang et al., 2019). The affordances needed for self-disclosure about emotional experiences and motives for the social sharing of emotions have been studied in different online contexts, such as social media (e.g., Vermeulen et al., 2018), blogs (e.g., Rodríguez Hidalgo et al., 2015) and online health communities (Yang et al., 2019). For example, one study found that reciprocity between users on peer-to-peer support websites was much better in private online anonymous conversations

than in a public anonymous forum (Yang et al., 2019). If the main reason for writers to share their personal narratives is to get social support responses from others, a private chat may be more ideal than a public forum (Yang et al., 2019).

To our knowledge, no research has looked at the interplay between different motives for the social sharing of emotions and writing instructions or interface design adaptations in the context of peer-to-peer support websites. For example, we can ask ourselves whether sharing an emotional experience to receive social support requires different affordances and interface design adaptations than sharing an emotional experience for clarification purposes. In case of reading personal narratives, it may be interesting to see how personal narratives in which the narrator uses different coping styles (i.e., emotion-focused vs. problem-focused) may affect readers' own emotions and coping self-efficacy in relation to the distressing event in question. It may also be interesting to examine readers' and responders' reactions to narratives that are written with different motives for the social sharing of emotions in mind.

Multi-disciplinary research

Finally, we highly recommend conducting multi-disciplinary research on the use of personal narratives on peer-to-peer support websites from both a communication and psychological perspective. We strongly believe in the applicability of a peer-to-peer support website as an online mental health tool to enlarge young people's social support network and increase coping self-efficacy and mental health. We believe studies within the field of psychology and communication may provide complementary insights on how to develop a peer-to-peer support website for young people.

Psychology scholars have expertise in a large range of theories and corresponding evidence-based practical tools that enhance emotional well-being and coping self-efficacy with young people and are attentive to specific vulnerable groups. For example, we borrowed expressive writing theory and the 'G scheme' used in chapter 4 from the psychological literature to apply to writing instructions and interface designs in the context of a peer-to-peer support website. Communication scholars, on the other hand, are best at translating those practical tools into a mediated context. By using theories on computer-mediated communication and interface

design theories (e.g., the TIME model; Sundar et al., 2015) communication scholars can ensure practical feasibility and acceptability of the medium's affordances and interface features by including users' motives, expectations, and interface design needs to make these websites as safe, appealing, and effective as possible. Of course, it should not be dismissed that communication research itself has a lot of theories that have shown their applicability in health interventions, such as narrative persuasion theories as we use in this Ph.D. project.

Therefore, we suggest that further research on this topic could benefit from multidisciplinary research to study the acceptability and efficacy of peer-to-peer support websites and their specific affordances and interface features.

Opportunities for further research

This dissertation proposed a narrative perspective on the writing and reading of personal narratives on peer-to-peer support websites for young people and how the interface design of these websites can be adapted to that perspective. In the very last part of this dissertation, we mean to go into detail about opportunities for further research, building upon the narrative perspective we used and the findings that follow from that.

More specifically, we see future perspectives in tailoring the peer-to-peer support website to the needs of the individual user employing artificial intelligence (AI). We will talk in more detail about two applications of AI: natural language processing (NLP) and Text-to-image AI generators. This is in line with research on online (mental) health interventions that continuously show that interventions are more effective when they are tailored or personalized to the individual user (Brug et al., 2022).

Natural language processing (NLP): Personalized writing instructions and reading content

What is Natural Language Processing (NLP)?

In the most basic sense, Natural language processing (NLP) is a technique making use of artificial intelligence (AI) and machine learning (ML) to understand and generate text messages in an automated manner (Khurana et al., 2022). More

precisely, it combines two techniques: Natural language understanding (the automated analyzing of texts to understand what people think, feel, and do; NLU) and natural language generation (the automated generation of language; NLG; Khurana et al., 2022).

NLP techniques are often used to create so-called 'conversational agents' or interactive dialogue systems that mimic human conversation using text or spoken language. According to researchers (Laranjo et al., 2018), conversational agents or dialogue systems may appear in many forms. For example, they can differ in terms of dialogue management (i.e., degree of interactivity between the user and the system; either fixed or flexible), dialogue initiative (i.e., lead by the user or the system), or input and output modality (i.e., spoken or written). One of the biggest challenges of such conversational agents and dialogue systems is the generation of empathic responses (Ma et al., 2020).

A well-known example of such a conversational agent or dialogue systems is a chatbot. They do not only automatically analyze what the conversation partner is saying (NLU), but also formulate an appropriate answer to that (NLG). They are flexible dialogue systems that generate written output that is highly contingent upon the prior input of the user. One of the most advanced chatbots available nowadays is ChatGPT (OpenAI, 2022).

Applications of NLP on peer-to-peer support websites

Researchers have concluded that NLP techniques may be useful for various social support purposes and online (mental) health interventions, including interactive and self-guided interventions, such as blogs and peer-to-peer support websites for writing about distressing events (Calvo et al., 2017; Laranjo et al., 2018). In the context of peer-to-peer support websites, it was suggested that NLP can help moderators quickly detect and address those users who are the most in need of help (Calvo et al., 2017). It is generally suggested that analyzing what people write and read on social networking sites together with information on people's shifting use of the medium (e.g., increase or decrease in social activity and involvement or interest in certain topics) could help to determine those in need of mental health support (Choudhury et al., 2013). Its applicability for this purpose was already shown in the context of different social networking sites (e.g., Choudhury et al.,

2013; Guar et al., 2018; Shen & Rudzicz, 2017), including social support groups (Reddit; Low et al., 2020).

Conversational agents or Interactive dialogue systems, such as Chatbots, have already proven their applicability to enhance conversations between the user and the system, enhance reflection on behalf of the user or provide people with social support in times of stress (e.g., Lazard et al., 2021; Liu & Sundar, 2018). It was also suggested by previous research that such dialogue systems or chatbots could help with training moderators of peer-to-peer support websites to provide better social support responses to users (Yao et al., 2022). In chapter 4, we wrote about other forms of dialogue systems using NLP and how these may enhance conversations between the users of the system (O'Leary et al., 2018).

Personalized writing instructions

We believe NLP could be used to personalize writing instructions to individual users and make interactive interfaces more contingent upon the prior input of the user.

In chapter 2 we tested the effectiveness of different writing instructions for writers. We tested the same writing instructions with every participant in our sample. However, previous research on expressive writing suggested that writing instructions and feedback should match the areas in which young people still need guidance (Travagin et al., 2016).

We believe that NLP could help detect where the writer may need more writing assistance and adjust writing instructions or prompts to those needs. For example, if the website signals that the user does not use enough cognitive words (e.g., think, believe, realize, etc.; signaling cognitive processing and meaning-making of the situation), the website could prompt users to elaborate more on the causes and effects of their emotions and thoughts. If the website signals that the user writes significantly more about the negative emotions and aspects about their distressing experience, the website could prompt the user to focus on the positive and reframe certain aspects of their narrative for the better. Using NLP for this purpose may help writers to write in more depth, detail, and structure about their personal experiences.

For example, an expressive writing intervention with young adults in an online context showed that when linguistically-tailored video feedback about the importance of writing about positive emotions was shown after the writing task, users described more positive emotions in their following writings afterward (Owen et al., 2011). Moreover, the participants were also more convinced about the importance of writing about positive emotions in general (Owen et al., 2011).

In chapter 4 we tested the applicability of an interactive interface, which implemented writing instructions in the interface design of peer-to-peer support websites. This interactive interface is a basic dialogue system. It mimics a certain dialogue between the user and the platform by asking predetermined fixed questions (i.e., writing instructions). These instructions were the same for every user and therefore not contingent on the prior input by the user. The written feedback from some participants reflected a need for an interface that is more flexible and lends more opportunity to the user to steer the course of the conversation. We believe that NLP could be used in this context to make the writing instructions by the website more contingent upon the prior input of the user. For example, it was noted by some of our participants that they already wrote about their emotions in relation to the distressing events they described before they were asked to do so by the interactive interface. By using NLP, the website could detect in real-time that the user already wrote about emotions in relation to the distressing event and either prompt the user to go more into detail about these specific emotions or give the user other writing instructions instead. These writing suggestions could occur in real-time or after writing in the form of constructive feedback. Writing instructions could also be adjusted before writing, based on previous writings by the user.

Finally, natural language processing could also help responders to write better social support responses to the personal narratives of others. NLP techniques could detect what kind of social support the writer is most likely to appreciate and prompt the responder using tips and writing instructions to write a social support response that is most fitted for that purpose. In the same way, it could be used to analyze the social support responses that are written, either in real-time or after writing.

Personalized reading content

Natural language processing (NLP) could personalize the set of personal narratives to the preferences and needs of the reader.

In most cases on peer-to-peer support websites, personal narratives are sorted into categories based on their most prominent theme (e.g., family, peer relationships, health, sexuality, etc.). Mostly, the very last personal narrative that has been written on the theme, or the personal narrative with the most comments, appears first in the list of narratives. However, these narratives may not be the most interesting or helpful to the reader in question.

In the study of chapter 3, it was shown that the similarity between one's own experiences and those of others makes narratives all the more interesting and worthwhile reading for the reader. NLP techniques could help readers to detect and recommend the personal narratives they are most likely to read based on their interests.

For example, the website could make recommendations based on the themes and content of narratives that the reader had previously read or commented on, or based on the content of others' narratives and the narratives written by themselves. Moreover, the same NLP techniques could help to optimize the search engine for readers to find the personal narratives of others they are truly interested in reading.

Helping readers find more relevant personal narratives may also increase the likelihood of users responding to the narratives they read. This may ultimately lead to more helpful social support responders for writers as well, since chapter 1 showed the importance of emotional support by similar others.

Important note on natural language processing for peer-to-peer support websites

Although NLP seems a promising technique to use on peer-to-peer support websites, it is important to note that thorough personalization using NLP techniques could possibly intervene with the personal agency of the user and may ultimately negatively impact users' attitude towards the website and demotivate the use of the website (as expected by the TIME model, Sundar et al., 2016).

As pointed out earlier in this discussion, writing instructions and interface adaptations of any kind, with or without the use of NLP, should always serve the purpose of stimulating rather than restricting young people to write in more depth about their personal distressing experiences. By no means do we mean to state that all negative personal experiences of peer-to-peer support website users should be filtered out by the use of NLP techniques. After all, the ultimate goal of a peer-to-peer support website is to be a safe space in which young people can share the negative and the positive without too many restrictions, but in a way that is most effective to both writers and readers.

For those reasons, we expect that NLP should not automatically correct and rephrase everything the user writes, intervening with users' sense of agency to write what they want. Nor should it be used to limit young people's access to experiences that differ from their own. Instead, NLP should be used to provide constructive feedback to users' peer-to-peer support responses and help users to find the content they need. The principles of the TIME model (Sundar et al., 2015) could be applied to examine under which circumstances and to what degrees the use of NLP is most desirable.

Text-to-image AI generators: From writing to visualizing

In this study, we built upon existing peer-to-peer support websites that are heavily focused on written content. However, writing a personal narrative may still be hard for young people. We proposed different writing instructions and interface adaptations to make the process of writing more effective. However, we can ask the question whether we can avoid writing altogether on peer-to-peer support websites by giving users more agency on which format to use to convey their message. For example, by allowing users to express their experiences in a visual format.

The question of the possibility of conveying a personal narrative in a visual format was first raised by a volunteer at TEJO, an organization working together with volunteering professional therapists to provide affordable psychological therapy for children and adolescents (from 10 to 20 years old; TEJO, 2020). This person mentioned that some children and adolescents may not be very good at explaining their distressing experiences in words, but would rather like to express themselves

through visual representations, drawings, dancing, or other creative outlets. Later that year, an invited discussant in my doctoral seminar raised the same question. This question became relevant again when one participant in the study presented in chapter 4 explained in his written feedback that he would not use a website with similar affordances, since he does not like writing.

It has previously been evidenced that creative activities, such as creative writing, performing, visual, and digital or electronic arts can help with the emotional expression of thoughts and feelings and improve mental and physical health (Fancourt et al., 2020; Shukla et al., 2022). Especially visual emotional expression was found to be a promising and effective method for emotional regulation among adolescents and young adults. For example, one study concluded that visual storytelling using photographs was a good method to use with physically ill adolescents to promote self-understanding and self-expression (Drew et al., 2010). Another study with young adult cancer survivors concluded that drawing together with written emotional expressions helped them to increase self-understanding and served as a healing experience (Green & Young, 2015). Nevertheless, Fancourt et al. (2020) concluded that enjoyment, practice, and a greater ability to use artistic activities may be important requirements to make use of creative activities for emotional expression.

Possibly text-to-image AI generators, such as DALL-E or Midjourney, may prove their usefulness for emotional expression. Text-to-image generators are AI-driven online tools that automatically generate images based on text prompts related to the content and style of the image that you want to convey. The application of text-to-image attracts a lot of interest in artistic fields (Reviriego & Merino-Gómez, 2022), but their use for (mental) health interventions are limited. Recently, such text-to-image generation was used in a Belgian mental health awareness campaign called 'Zie mijn pijn' (or 'see my pain'; Helan, 2022). In this campaign, a text-to-image generator was used to visualize the metaphors people used to describe their mental health problems, such as anxiety disorder or psychosis. In this campaign, people's emotional reactions to these visual representations were captured on video. Its purpose to explain the inexplicable had worked.

We found only one article that examined the effect of text-to-image AI generators in combination with an online expressive writing tool to downregulate negative emotions (Azuaje et al., 2023). The researchers developed a writing tool called 'StoryWriter' that generated a visual representation of users' narratives in real-time. The researchers believed that the images could counter negative emotions that were brought on by the writing task. With an experimental study design, the researchers found that users who were assigned to the tool exhibited lower post-study anger and sadness than those in the control condition, but not lower anxiety or stress. This means that the users were indeed successful in downregulating negative emotions through the application to some extent and for specific emotions. This was not the case for upregulating positive emotions. A qualitative follow-up study showed similar results. This time the results indicated that participants were not only able to down-regulate negative emotions but were also able to upregulate positive emotions to some extent. However, written feedback by the participants suggested that the effects were rather a result of the writing exercise and not of the visualizations. In fact, some participants declared that the visualizations were a bit unsettling to them and that they avoided looking at them for that reason. The researchers explained that the tool was trained on photographs and may have generated a distorted version of reality. This could be avoided by adjusting the tool to create more animated visual representations.

These tools may over time prove to be accessible and easy to use for the expression of emotional experiences, also for those who are not very familiar with creative outlets. However, according to experts on the development and use of these tools from the AP University of Applied Sciences and Arts in Antwerp, these tools are not yet fully capable of capturing the full spectrum of emotional language. Users still need thorough knowledge and experience on the practices and prompts that are needed to get the desired outcomes. Until these tools are better researched and developed, these tools may not yet be ideal for generating a fitting visual image that fully resonates with young people's personal emotional experiences, nor will they be convenient to use by people who are not yet familiar with creative tools.

Nevertheless, until text-to-image AI generators are more accessible and easier to use for the wider public, studies can experiment on how text-to-image generation may accompany the process of writing a personal narrative on a distressing

experience and how the use of these tools for this purpose is evaluated by users. Currently, a master student enrolled in the Communication Studies program at the University of Antwerp is studying this topic.

Main conclusion

Most of the previous research on peer-to-peer support websites has focused on the exchange of social support responses as the primary mechanism explaining the positive effects of the use of peer-to-peer support websites on well-being. Although this perspective has led to interesting research findings that should not be dismissed, we believe it may oversimplify the effects for active and passive users.

A narrative perspective may help to study the underlying mechanisms by which sharing, reading, and responding to personal narratives on peer-to-peer support websites may have both positive and negative effects, regardless of the social support responses users give or receive. Furthermore, we proposed writing instructions and interface design adaptations adapted to that perspective.

From a narrative perspective, we conclude that the way young people write about their personal experiences and the content of personal narratives they read of others on peer-to-peer support can affect young people's emotional coping self-efficacy and well-being, independent of the social support responses that are exchanged between users. The main results of this dissertation, therefore, lead to theoretical and practical conclusions that may reinforce the positive effects and overcome the possible negative effects of writing and reading online personal narratives on peer-to-peer support websites.

From this narrative perspective, we posit that the goal of these websites should not be to merely increase active use but increase both active and passive users' positive experiences and learning processes, such as increased positive emotions and coping self-efficacy. As a result of this perspective, we advise to shift the focus on the number of active users or social support message exchange as a quality measure for the peer-to-peer support website to a focus on users' experiences and effects as a quality measure.

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Author contributions

Chapter 1: Coping with distress among adolescents: Effectiveness of personal narratives on support websites

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PhD. researcher, Sofie Mariën: conception of the study, setup of the method, data analyses, drafting and revising of the manuscript.

Prof. dr. Sara Pabian.: Data analysis, drafting and revising the analyses section of the manuscript.

Supervisor, prof. dr. Karolien Poels.: conception of the study, setup of the method, feedback on the study and method, critical revision of/feedback on the manuscript.

Supervisor, prof. dr. Heidi Vandebosch: conception of the study, setup of the method, feedback on the study and method, critical revision of/feedback on the manuscript.

Chapter 2: Write positive, be positive: Expressive writing changes young people's emotional reactions towards the COVID-19 pandemic

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Chapter 3: I can(not) cope with this: Positive vs. negative personal narratives and readers' emotions and coping self-efficacy

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Chapter 4: Seeking social support online: Can an interactive interface help adolescents share personal stories?

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Annex

Annex 1. Chapter 2: Codes, subcodes and examples of the content analyses

Negative emotions	
Sub codes	Examples
Worry	e.g.: 'I have more time to think, which makes me doubt about everything'; 'Brooding has become a habit'
Stress	e.g.: 'I notice that the stress makes me isolate myself even more'; 'I study all day long because there is nothing else to do. This makes me very stressed'
Missing	e.g.: 'I really miss my friends and family'; 'I miss my normal life'
Anxiety	e.g.: 'I'm afraid she will take the virus home and make our family sick'; 'I am terrified of losing people'; 'I fear for my exams'
Generally not feeling good	e.g.: 'I feel like I've already lost two months of my life'; 'Sometimes I think I'm going to relapse into my depression, because some feelings are coming back to the surface now'

Positive emotions	
Sub codes	Examples
Hope	e.g.: 'But in spite of all the fear and uncertainty, I am also hopeful'; 'I hope this quarantine will be over soon'; 'All my friends and family are still healthy and I hope they will stay that way'
Gratitude	e.g.: 'I am grateful that my friends and family are still okay'; 'I consider myself very happy, because I live in a beautiful village with a lot of nature'
Generally feeling good or better	e.g.: 'I feel 10 x better in my skin'; 'Actually, I feel great'
No negative emotion	e.g.: 'I don't really panic'; 'I don't really feel lonely'

Negative aspects	
Sub codes	Examples
Lack of social contact	e.g.: ‘I really miss my friends and family’; ‘I can't go to him, although I would like nothing more’
Disadvantages of homeschooling	e.g.: ‘I have the feeling that everything is taking much more time than usual’; ‘I find it much harder to get up the courage to take my online classes than it was to just go to class’; ‘For me it has always been difficult to plan and now this is even worse because I have too much freedom’
Physical and/ or mental disadvantages	e.g.: ‘I experience that my battery runs out very quickly. I eat, sleep, work and repeat... It's not really relaxing’; ‘I had less motivation to get up every day, I got unexplained crying fits, had no appetite and couldn't concentrate.’; ‘These questions can sometimes haunt me in my sleep.’
Missing out on experiences and activities	e.g.: ‘I am turning 18 this month and it's not going to be a party like we are used to’; ‘I play volleyball, when this disappeared I was quite sad’; ‘Everything I was looking forward to has been cancelled’
Divers disadvantages	e.g.: ‘I had to choose between my parents, because they are divorced, this was hard for me’; ‘I would like to be more outdoors, but this is difficult since I don’t have a garden’; ‘Now that my parents are at home a lot, we get into a discussion every now and then’

Positive aspects	
Sub codes	Examples
More time for yourself	e.g.: ‘This is an excellent time to come to yourself. Think about what you want in life and who you are’; ‘I can finally work on myself’
More time for fun	e.g.: ‘Because I didn't have to move to and from school anymore, I suddenly had more time for sports and recreation’; ‘I think this crisis is a good time to find new or old hobbies’
Advantages of homeschooling	e.g.: ‘Digital education is also a plus for me: everything at my own pace.’; ‘I find the online learning equipment of our university very well organized.’; ‘On a positive note, I experience much less pressure for school now.’

Divers advantages	e.g.: ‘We talk much more in our family now and I notice that this has brought us closer together.’; ‘I also find it very beneficial that I can sleep longer now’; ‘My commitment to exercise has improved a lot since the lockdown.’

Ineffective coping strategies

Sub codes	Examples
Ineffective coping strategies	e.g.: ‘I walk a lot hoping to clear my head, but unfortunately this is not enough to calm down.’; ‘I try so hard to make a distinction between work and private life, but it is difficult.’; ‘When I feel bad, I eat. I notice that this is not good.’
General distrust in one’s coping abilities	e.g.: ‘I want to find peace, but that is very difficult.’; ‘I am not resilient enough to get it all done.’; ‘I am angry with myself because I did not handle this situation better.’
Lack of coping strategies	e.g.: ‘Normally I still have my friends, school and hobby’s to hold on to, but that is all gone now. So it is difficult to get through the day sometimes.’; ‘I need something to look forward to, but the end is not yet in sight.’; ‘I have not yet been able to seek help for my mental health.’

Effective coping strategies

Sub codes	Examples
Effective strategies	e.g.: ‘Social media contact with friends helps enormously.’; ‘Walking helps to keep me in a good mood.’; ‘Creative projects help me to calm down and keep myself busy.’; ‘What really helps me is to maintain a fixed routine’; ‘I have learned that writing and talking about feelings really helps.’; ‘My religion makes me believe that we are not alone.’; ‘I don't give up, because I know this will pass and because I am not alone in this situation.’;
General trust in one’s coping abilities	e.g.: ‘I got mental strength to come up with and live up to solutions for the negative emotional spiral in which I was.’; ‘Overall, I handle the situation reasonably well and I see the positive side of it.’; ‘The first weeks were the hardest, but I've found my peace again.’

	High coping self-efficacy narrative	**Low coping self-efficacy narrative**
Starting point	My life has not been the same since the corona pandemic, **although it is certainly not all negative.**	My life has not been the same since the corona pandemic, **and it changed for the worse.**
Negative consequence Staying at home	Obviously, I am tired of always being at home but **I can still enjoy the peace and quiet** I am currently experiencing.	In the beginning, **I liked being at home more and I could enjoy the peace and quiet**, but now that we are a year down the road, **that is no longer the case.**
Negative consequence Lack of social contact (constant)	Of course, I do miss my friends immensely and I also notice that some friendships have already been diluted because we are forced by the government to choose which people we want in our bubble and which we do not.	Of course, I do miss my friends immensely and I also notice that some friendships have already been diluted because we are forced by the government to choose which people we want in our bubble and which we do not.
Coping strategy Positive reframing	**Yet I can put this into perspective** because I realize that when we get to see some more people again, those friendships will recover.	Some people say that this will improve when we can see more people again, **but at the moment I can't put that into perspective.**
Coping strategy Social contact	I also try to maintain my friendships now by calling and messaging them often. **Of course, it is not the same as seeing each other in real life, but that way I never really feel alone.**	I don't manage to maintain my friendships anymore because **calling and messaging is not the same as seeing each other in real life. It makes me feel really alone.**
Negative consequence Homeschooling (constant)	I do notice that it takes me a lot of energy to think of everyone and keep in touch with some friends because I am very busy with school and experience quite a bit of stress. So much is expected of us and schoolwork keeps piling up.	It also just takes me super much energy to think of everyone and keep in touch with some friends because I am very busy with school and experience quite a bit of stress. So much is expected of us and schoolwork keeps piling up.

Note. ***Bold*** *are differences in coping self-efficacy and underlined are emotions.*

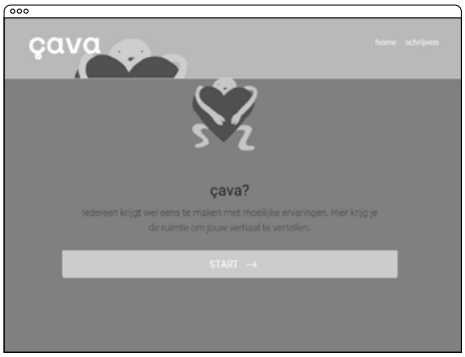
	High coping self-efficacy narrative	Low coping self-efficacy narrative
Coping strategy Planning	Still, **I manage to keep up with it because of the planning I do each week.** Planning everything out gives me a good overview of how far along I am and what I still need to do.	**I do make a schedule every week to keep up with all my tasks and classes but still I keep getting hopelessly behind with all my school work.**
Negative consequence Canceled hobbies	I do regret that I am now sitting at home so much and my hobbies may not continue. **I have therefore had to find my relaxation in other things.** For example, I now read more books, take a walk almost every day, and bake and cook a lot. **These things do give me some peace in this strange and busy period.**	I also feel very sad that I am now sitting at home so much and my hobbies are not allowed to continue. I only work for school anymore and just **can't find any relaxation and rest in this strange and busy period.**
Coping strategy Daily structure as a coping strategy	I also try to bring structure to my days by waking up at a set time, getting dressed, and starting my day in good spirits. I didn't do this at the beginning of the lockdown but now **I find that this fixed structure helps me to stay energized and motivated.**	On top of that, **I no longer manage to bring structure to my days so I start every day without energy and motivation.** It irritates me that I was able to do this at the beginning of the lockdown and now I can't anymore.
Negative consequence Conflicts at home	**I like that my parents are home so much now** because they work from home every day. **Of course, sometimes need a moment to myself. We argue a lot more and emotions can run high, but luckily I can deal with that.**	**I don't like that I am never home alone anymore** now that my parents work from home every day. **This makes it hard for me to find a moment to myself.** I can suddenly get very angry and sad and therefore we argue a lot more.
Coping strategy Movement	As soon as I notice that sad or angry, I go for a walk or a jog or do some other kind of sport. **That way I can get my mind off things and feel good that I've had some exercise. That really makes me feel good.**	I just have no idea how to deal with all my feelings and thoughts anymore. **My friends tell me it would do me good to go for a walk or do some sport, but that doesn't help me to take my mind off things and feel better.**

	High coping self-efficacy narrative	Low coping self-efficacy narrative
Coping strategy Social support as a coping strategy (Constant)	Despite the arguments that I have with my family, I feel very loved and supported by them. Their support helps me look to the future with hope.	Despite the arguments that I have with my family, I feel very loved and supported by them. Their support helps me look to the future with hope.
Negative consequence People not following the rules (Constant)	It makes me very angry when I see on the news or on social media that people are not complying with the measurements taken by the government. Ideally, I would also just meet up with whomever I want and pretend that this pandemic doesn't exist. But then I think of my family and my grandmother ... I would never forgive myself if they got infected by me and died. That's something I don't want to have on my conscience because I love them so much.	It makes me very angry when I see on the news or on social media that people are not complying with the measurements taken by the government. Ideally, I would also just meet up with whomever I want and pretend that this pandemic doesn't exist. But then I think of my family and my grandmother ... I would never forgive myself if they got infected by me and died. That's something I don't want to have on my conscience because I love them so much.
Negative consequence Lost time and experiences	A lot of time and experiences have been taken away from me, but **that doesn't mean it was a lost year.**	All of this time and experiences are never coming back and I am really struggling with that. **Like as if I lost an entire year of my life.**
Coping strategy Keeping a positive perspective as a coping strategy	Despite being really fed up and feeling unhappy at times, **I do stay positive**. Of course, I sometimes wonder about the future and what our society will look like in the future, but nobody knows the answer to that at the moment so then **it's just better not to fret too much about this and above all to stay hopeful and positive**. Right now the future still seems far away, but I do know that the day when all this is over will come someday and that is definitely something to look forward to!	I'm just so fed up with it and sometimes feel so unhappy that I have a hard time staying positive. I keep asking myself questions about the future and how our society is going to change... **I can ponder about that for hours and I just can't seem to stay hopeful and positive.** I remain bleak about the future. Nobody can say when our life will be normal again and that makes me very discouraged.

Note. ***Bold*** *are differences in coping self-efficacy and underlined are emotions.*

Annex 3. Chapter 4: Homepage of the fictitious peer-to-peer support website

Step 1 – Starting page



Step 2 – Selecting a theme

Step 3 – Your experience

Describe the situation in broad terms. What is going on?

Step 4 – Thoughts and feelings

What were your thoughts and feelings about that situation? What do you think and feel about it now?

Step 5 – Behavior and consequences

What did you do as a result of the situation, your thoughts, and feelings? What was the consequence of that behavior?

Step 6 – Strategies for dealing with the situation

Is there anything you can do to better deal with the situation? What can you do to solve the problem? How can you deal with difficult thoughts and feelings?

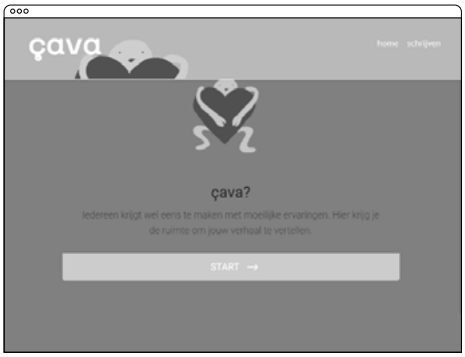
Step 7 – Rewriting the compiled personal story

What did you do as a result of the situation, your thoughts, and feelings? What was the consequence of that behavior?

Step 8 – Writing a title to the personal story

Is there anything you can do to better deal with the situation? What can you do to solve the problem? How can you deal with difficult thoughts and feelings?

Step 1 – Starting page



Step 2 – Selecting a theme

Step 3 – Writing a personal story (blank input field)

Step 4 – Writing a title to the personal story

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