

JYU DISSERTATIONS 145

Katharina Schäfer

Connecting Sounds

Private Music Listening as
Symbolic Social Behaviour



UNIVERSITY OF JYVÄSKYLÄ
FACULTY OF HUMANITIES AND
SOCIAL SCIENCES

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Private Music Listening as Symbolic Social Behaviour

Esitetään Jyväskylän yliopiston humanistis-yhteiskuntatieteellisen tiedekunnan suostumuksella
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Meiner lieben Oma
[To my dear grandma]

ABSTRACT

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As social creatures, human beings need to feel connected to other humans. While social needs are ideally satisfied through frequent direct social interaction, humans are flexible enough that they can, at least temporarily, fulfill these needs through indirect symbolic interaction. It has been shown that people can mentally connect with fictional characters while reading novels, get attached to their favourite television personae, or replenish feelings of belonging with reminders of existing social bonds. Previous research highly suggests that also solitary musical engagement has the power to act as substitute for direct personal interaction, i.e., a social surrogate. Thus, this dissertation aims at investigating if private music listening can afford individuals a sense of connection.

Since recent studies have assigned sad music a high potential to convey a sense of company, study I consisted of an integrative review of the reasons for the enjoyment of music-evoked sadness. Study II aimed to experimentally investigate if listening to comforting music can alleviate loneliness after experiencing a social loss. Since the analysis suggested that not only comforting pieces may convey a sense of company, the different mental processes through which private engagement with various kinds of music and other media might provide individuals a sense of connection were explored with an online survey in study III.

The results indicate that music is actively utilised as a social surrogate alongside other media. Yet, music seems to be especially powerful in evoking nostalgic reminiscence that effectively counteracts loneliness. Thus, the findings put forward that even solitary engagement with familiar musical pieces can provide individuals a sense of connection. Evolutionary and simulation theories are combined to explain the power of private music listening as symbolic social behaviour.

Keywords: symbolic social behaviour, social surrogacy, mental simulation, nostalgia, empathy

TIIVISTELMÄ (FINNISH ABSTRACT)

Schäfer, Katharina

Yksityinen musiikinkuuntelu symbolisena sosiaalisena käyttäytymisenä

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Ihmisillä on sosiaalisina olentoina tarve tuntea yhteyttä muihin ihmisiin. Kun sosiaaliset tarpeet tyydyttyvät suoran ja riittävän sosiaalisen vuorovaikutuksen kautta, ihmiset kykenevät täyttämään sosiaalisia tarpeitaan ainakin tilapäisesti myös hyödyntämällä epäsuoraa symbolista sosiaalista vuorovaikutusta.

On osoitettu, että ihmiset voivat tuntea yhteyttä lukemiensa romaanien fiktiivisiin henkilöihin, kiintyä television suosikkihahmoon, tai ehkäistä yksinäisyyttä muistuttamalla itseään olemassa olevista sosiaalisista siteistä 'symbolisten' esineiden kautta. Aiempi tutkimus antaa ymmärtää, että yksin tapahtuva musiikin kuuntelu saattaisi toimia samalla tavoin suoran vuorovaikutuksen korvikkeena. Siispä tässä väitöstutkimuksessa pyritään selvittämään, voiko tuottaa kuulijalle yhteyden tunteen.

Koska aiemmassa tutkimuksessa on vihjattu surullisen musiikin mahdollisesti välittävän yhteyden tunteita, ensimmäinen tutkimusartikkeli on kokoava katsaus syihin, miksi musiikin herättämästä surusta nautitaan. Toisessa artikkelissa tutkittiin empiirisesti, voiko lohduttavan musiikin kuuntelu lievittää yksinäisyyttä sosiaalisen menetyksen jälkeen. Tulosten mukaan ei ainoastaan lohduttava musiikki, vaan musiikki ylipäätään voi tarjota yhteyden tunteen.

Niinpä kolmannessa tutkimusartikkelissa tarkasteltiin kyselyn avulla erilaisia psykologisia prosesseja, joiden kautta musiikki ja muut mediat voivat välittää yksilölle yhteyden kokemuksen.

Tulokset osoittavat, että musiikkia käytetään aktiivisesti sosiaalisena korvikkeena muiden medioiden ohella. Kuitenkin musiikilla näyttäisi olevan erityinen voima herättää nostalgisia muistoja ja siten ehkäistä yksinäisyyttä. Siispä jopa yksin tapahtuva tuttujen kappaleiden kuuntelu voi tuottaa yksilölle yhteyden tunteen. Pohdinnassa käytetään evoluutio- ja jäljittelyteorioita selittämään yksityisen musiikin kuuntelun perustaa sosiaalisen vuorovaikutuksen korvikkeena.

Avainsanat: symbolinen sosiaalinen käyttäytyminen, sosiaalinen korvike, mentaalinen jäljittely, nostalgia, empatia

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Author's contribution to the articles

1. This author, together with JV, was responsible for the psycho-social level of explanation (chapter 3). She wrote section 3.2 with assistance from her primary supervisor.
2. This author designed the study, collected and analysed the data and prepared the manuscript for submission for peer-review with assistance from all three supervisors. The data were also collected by this author with the help of three undergraduate students.
3. This author designed the study, collected and analysed the data and prepared the manuscript for publication with assistance from the co-author.

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1 INTRODUCTION

When asked if one's favourite actor is an actual human being, most people would agree although they have probably never met that person face-to-face. Similarly, we are inclined to think that those speaking on the radio are actual humans even though the majority of us has never seen or interacted with them in real life. From where does the implicit belief come that people portrayed in the media exist in reality? Strikingly, our mind is even able to establish a social connection with these mediated or indeed completely imagined others so that we perceive social rapport where no objectively verifiable relationship exists (e.g., between fictional characters and readers) or where no real interaction is possible (e.g., in parasocial relationships with television characters; Hawkey & Cacioppo, 2010). If we connect with real and fictional others represented in television programmes, films, or fiction, can the 'other' also be a musician? In other words, do we connect with musicians similarly to how we do with fictional or real characters portrayed in other media? This question is at the core of the present work and yet, in order to answer it, we need to discover how we bond with others we have never met or that probably exist only in our imagination and what it is that enables us to feel for media-represented others. These questions are answered by this doctoral research project that aims to investigate the mental operations that allow individuals to connect with real or fictional others represented in music and other media. Thus, the goal of the current research is to integrate theoretical and empirical approaches to music-related social cognitive processes by examining the social uses of various media. Although this work focuses on the social effects of engaging with media, it does not deny that other modes of behaviour such as praying can have similar effects (Gabriel, Valenti, & Young, 2016).

In this project, the topic is approached from the perspective of evolutionary psychology which is a branch of psychology that is informed by evolutionary biology (Barkow, Cosmides, & Tooby, 1992). This additional knowledge helps to understand the origin of human behaviour such as connecting with imagined characters by taking into account the process that designed the human mind. The summary of this doctoral research project is divided into three parts; an outline of the theoretical background, a summary of the empirical work, and a discussion

of the results. While the first part zooms in from the bigger picture towards finer details, the last part moves from concrete findings to more abstract concepts. More precisely, the first section outlines the theoretical background beginning with the importance of social connectedness and the different symbolic social activities by which social connectedness is maintained in the absence of direct social interaction. These activities are symbolic because they occur mostly in our minds (Gabriel et al., 2016). After this theoretical background is established, the reader is familiarised with social aspects of music, comprising the social benefits of active music making and listening, the social thinking music is supposed to trigger, and the preliminary evidence for connectedness through music listening. The first part concludes with the presentation of a concrete hypothesis about the social function of - in this case - sad music.

The second part comprises the empirical share of this work and provides summaries of the aims, methods, and results of all three studies included in this project. These results are discussed in the third part of the summary with the theoretical background in mind. Departing from concrete mental connection mechanisms, this last section broadens the scope by addressing the origin of all symbolic social activities. The last section concludes with considerations of the consequences of the social use of media for human well-being.

2 THEORETICAL BACKGROUND

2.1 The significance of social belonging

The need to belong describes the desire to form and maintain strong, stable interpersonal relationships, constituting a fundamental motivation for human behaviour (Baumeister & Leary, 1995). Only physiological needs and safety (i.e., food and shelter) exceed the importance of social belonging or inclusion (terms are used interchangeably), vital for all social animals such as humans (Maslow, 1954). Hence, it is only human to feel lonely, i.e. socially isolated, from time to time (Cacioppo & Patrick, 2011) when our other needs take precedence. Additionally, social pleasures are proposed to be part of fundamental human desires since social interaction with conspecifics is important in the propagation of genes (Berridge & Kringelbach, 2008).

Consequently, feelings of loneliness resulting from an absence of social belonging might have been important warning signs for our ancestors to take care of their social attachment. Since we feel good when we feel connected to others and bad when we feel socially isolated, the same affective system that serves other basic needs is also likely to support belonging. Hence, the pain of social disconnection might have provided a survival benefit for our genes and thus for our species (Cacioppo et al., 2006). When behaviour supports moving towards an evolutionarily important goal such as social inclusion, it might operate without conscious awareness, since consciousness developed relatively late in humanoid evolution (Neuberg, Kenrick, Maner, & Schaller, 2004). Therefore, individuals are not always aware of the influence that the need for interpersonal attachment has on them (Fitzsimons & Bargh, 2003; Gabriel et al., 2016; Reeves & Nass, 1996).

However, loneliness, i.e. the opposite of social belonging, can lead to a vicious circle of negative thoughts, feelings, and behaviour if individuals feel socially isolated over an extended period of time; social exclusion usually impairs emotional self-regulation, influences expectations towards others, and distorts perception of the self and others (Cacioppo & Patrick, 2011). Lonely people are

hallmarked by increased social monitoring and more negative perceptions of social interactions in general (Gardner, Pickett, Jefferis, & Knowles, 2005). Besides its consequences on cognitive, affective and behavioural levels, loneliness also influences the functioning of the hormonal, immune, and cardiovascular systems. The effect of social isolation on health is comparable to that of high blood pressure, sedentary lifestyle, or smoking (House, Landis, & Umberson, 1988). Feeling excluded is associated with poor sleep quality, cardiovascular disease, immune system problems, increases in blood pressure, and other somatic maladies (Cacioppo & Patrick, 2011; Cacioppo, Grippo, London, Goossens, & Cacioppo, 2015). Further, feeling isolated affects mental well-being by lowering the sense of self-worth and heightening the level of rejection sensitivity, which, in turn, heightens the vulnerability for other psychological problems such as depression or violence (Gardner, Pickett, & Knowles, 2005). To summarise, while transient feelings of loneliness are a normal part of human life and might have promoted the survival of mankind, chronically lonely people suffer both mentally and physically. Hence, social inclusion is a fundamental motivation for human behaviour and humans need (to feel) social belonging to survive and thrive in this world.

2.2 Positive and negative facets of solitude

Being alone is not negative *per se*. Solitude also provides opportunities to engage in advantageous activities. Whether aloneness influences an individual's well-being negatively or positively depends on situational and personal factors (Long, Seburn, Averill, & More, 2003). In some cases, solitude gives rise to feelings of loneliness that have a negative impact on physical and mental health. As Long and colleagues (2003) found, individuals with an insecure attachment style or a neurotic disposition are more likely to experience aloneness negatively compared to their securely attached and emotionally more stable counterparts. They found that being alone can instigate a desire for diversion and thus motivate watching television, reading a book, surfing the Internet, or engaging in other distracting activities. Furthermore, the need for diversion was associated with negative indices of emotional well-being. However, engaging with media is not harmful *per se* and may even support certain solitary activities such as constructing or exploring one's own identity (DeNora, 1999; Larson, 1995), reminiscing (Barrett et al., 2010; DeNora, 1999), or regulating emotions (Larson, 1995; Saarikallio, 2010).

In contrast to this negative facet of solitude, being alone can be experienced positively, when it allows individuals to focus their attention inwards and gives space for self-discovery, creativity, or problem-solving. For adolescents, aloneness provides valuable opportunities for the exploration of their private selves and emotional self-regulation (Larson, 1995). Media can support these processes, for instance, by offering adolescents an idealised other (often an actor or musician) with whom to identify and feel connected (Larson, 1995). According to Long and

colleagues (2003), solitude is usually also experienced positively when it facilitates some form of symbolic connection to others who are not physically present such as God (however perceived) or significant others. Those symbolic social connections may be facilitated by items or media such as photos, jewelry, or music (Gardner, Pickett, & Knowles, 2005). In some cases, reflecting on an absent significant other could cause a mood state that is not only positive since it may also conjure negative feelings of yearning or longing (Long et al., 2003). Hence, being alone is usually experienced positively when it allows one to explore or regulate oneself, be creative, solve problems, have a spiritual experience, or feel especially close to a loved one.

2.3 Definition and conceptualisation of loneliness

Not only is the way of experiencing solitude influenced by personal dispositions, but genetic (e.g., personality) and environmental factors (e.g., culture) also affect the amount of social inclusion that one needs to feel good and remain healthy (Cacioppo & Patrick, 2011). Some people prefer spending most of their time on their own whilst others need social interaction on a daily basis. Because of this huge interindividual variety of social needs, loneliness is difficult to define objectively. In accordance with Cacioppo and colleagues (2015), I define it for our purpose as *perceived* social isolation (rather than aloneness), since it is the subjective perception of exclusion that impairs human well-being.

Over the last 50 years, loneliness has mainly been conceptualised in two different ways; either as a unitary or multidimensional construct (Cramer & Barry, 1999). As a unitary state, loneliness can result from deficits in a variety of relationships, varies only in intensity, and is most commonly measured with the UCLA Loneliness Scale (Russell, 1996). The multidimensional conceptualisation assumes that being lonely in a particular relationship domain can be qualitatively different from another, but that different types of loneliness share a common core (DiTommaso, Brannen, & Best, 2004; DiTommaso & Spinner, 1997). Hence, Cramer and Barry (1999) distinguish between a social and emotional facet of loneliness. While the former aspect refers to the size of the social network and is influenced mainly by relationships with friends, colleagues, and acquaintances, the latter relates to closeness and depends more on intimate relationships with e.g. caregivers or romantic partners (Cramer & Barry, 1999). A well-validated questionnaire to assess these domain specific loneliness experiences is the Social and Emotional Loneliness Scale for Adults (DiTommaso & Spinner, 1993).

In sum, the subjective perception of social exclusion is more relevant for psychological questions than more objective measures such as the size of one's social network, since the need for interpersonal connections varies largely between individuals. Therefore, personal feelings of loneliness are commonly assessed with psychometric questionnaires that either capture quantitative and qualitative aspects separately or measure the intensity of loneliness as a unitary construct.

2.4 Symbolic social behaviour

After reflecting on the importance of social inclusion, and defining and distinguishing between the different types of loneliness, various approaches to satisfying the need to belong will be presented. The ideal way is through frequent positive social interaction based on mutual care and concern, but individuals can derive partial satisfaction from various substitutes when they are momentarily isolated from their sources of social support or when direct social interaction is difficult or risky (Baumeister & Leary, 1995; Gardner et al., 2005). In those situations, humans can resort to indirect strategies to gain and sustain a sense of belonging (Gabriel et al., 2016; Greenwood & Long, 2009). Gardner, Pickett, and Knowles (2005) compared indirect methods to not being able to have a proper meal when hungry and therefore having a snack in the meantime. Hence, “social snacking” (Gardner, Pickett, & Knowles, 2005, p.232) is suggested to temporarily satisfy the need to belong until a direct social interaction is available. Further, these indirect strategies can be conceptualised as an extension of direct face-to-face interaction (Giles, 2002). Especially since the advent of the internet, plenty of new ways to be in touch with others have emerged such as visual telephony or instant messaging. Hence, the scope of possibilities with mediated social interaction is broader than ever before and the transition between direct and indirect interaction is smoother.

The indirect strategies of satisfying one’s social needs are also termed *symbolic social behaviour* which refers to solitary activities that facilitate the formation of interpersonal connections in the mind of the recipient (Gabriel et al., 2016) such as the imagined bond with a media character or artist. The symbolic, nonhuman targets by which individuals indirectly fulfil their social needs have been called *social surrogates* (Gardner, Pickett, & Knowles, 2005). Beloved music, books, television programmes, films, and interactive video games (Pinker, 1997) have been proposed as potential social surrogates alongside reminders of real relationship partners such as family photos, holiday souvenirs, or a wedding ring (Gardner, 2001; Gardner et al., 2005). None of those surrogates can directly respond to our social needs, but they might still indirectly satisfy them in different ways. Media that offer narratives, for instance, often provide fictional social worlds in which individuals can immerse themselves (Greenwood & Long, 2009). When people repeatedly enter the same story world (e.g., by following a series), they get to know - and potentially become attached to - the characters (Cohen, 2006). Despite the lack of reciprocity, these so-called parasocial relationships (Horton & Wohl, 1956) have the potential to enable lonely people to feel connected (Greenwood & Long, 2009). Additionally, media can convey a sense of belonging by providing characters and role models with whom consumers can identify (Greenwood & Long, 2009). Until now, systematic research has mainly described three different forms of symbolic social interaction: i) identification with favourite characters, ii) parasocial attachment to well-

known media figures, and iii) symbolic reminders of real relationship partners; these will be outlined in more detail in the following section.

2.4.1 Identification with characters of narratives

Literary storylines with fictional characters offer simulations of one's actual social world and allow readers a deeply immersive experience of social interactions (Mar & Oatley, 2008). This simulative involvement facilitates the understanding of social information and the understanding of others who are different from ourselves which helps to develop the capacity for social inference and empathy (Mar, Oatley, Hirsh, Dela Paz, & Peterson, 2006). Besides supporting the development of social skills, engagement with narratives allows individuals to connect with characters or groups of figures in other social worlds through *identification* (Gabriel & Young, 2011; Green, Brock, & Kaufman, 2004; Sestir & Green, 2010). This is characterised through the adoption of a character's thoughts, goals, emotions, and behaviours (Green et al., 2004) and leads to a merging of the self with the figure (Sestir & Green, 2010). Two types of identification can be distinguished (Giles, 2002): i) similarity identification denotes the connection to characters that are similar to oneself, for instance in regard to age, sex, or social class or those who face similar problems (Cohen, 2006; Feilitzén & Linné, 1975); ii) wishful identification describes the relation to characters that represent what audience members would like to be or to whom they are attracted rather than what they are (Cohen, 2006), and includes the desire to emulate that figure (Giles, 2002). Both types of identification with fictional or real figures is facilitated by transportation, which means that individuals get cognitively and emotionally absorbed into a story world (Green & Brock, 2000). When audience members identify themselves with a fictional character, they leave behind their own physical, social, and psychological reality (Green et al., 2004), forget their role as reader or observer (Cohen, 2006), and affiliate themselves with the group to which the character eventually belongs (Gabriel & Young, 2011). Engaging with *Harry Potter and the Philosopher's Stone* (Rowling, 1999), for instance, strengthens readers' beliefs in their magical abilities, while reading *Twilight* (Meyer, 2005) makes them feel more similar to vampires (Gabriel & Young, 2011). While this process of identification has been substantially investigated in the literary domain, a similar mechanism has been proposed in television research: When viewers feel for a protagonist, they empathically identify with this character (Giles, 2002; Greenwood & Long, 2009). Since emotions are triggered in the viewer during this empathic process, (s)he feels a sort of intimacy with the person for whom (s)he is feeling (Mar & Oatley, 2008). Hence, empathy has been proposed as the source of both sympathy and identification with fictional characters (Oatley & Gholamain, 1997). To summarise, narratives that offer fictional social worlds in which individuals can immerse themselves promote empathy as well as social knowledge and, at the same time, enable individuals to feel connected with a character or group of characters through empathic identification.

2.4.2 Parasocial relationships

When one becomes familiar with a particular media persona over time, one may develop a psychological connection to said figure, a so-called *parasocial attachment* (Greenwood & Long, 2009). These one-sided bonds are created with real people like celebrities (Derrick, Gabriel, & Tippin, 2008) as well as fictional characters (Giles, 2002), although the realism of the attachment target matters less the greater someone's need to belong (Gardner et al., 2005). Even though people consciously know that parasocial connections are not actual relationships, they are perceived as being psychologically real and meaningful (Gardner et al., 2005). It has been proposed that we automatically react to people presented in media as if they were present since our brain evolved in an environment where seeing or hearing a human being was an unmistakable sign of the presence of a conspecific (Reeves & Nass, 1996). Hence, it is not a surprise that parasocial connections show characteristics of real relationships (Gabriel et al., 2016; Kanazawa, 2002): When people repeatedly interact with a well-known, media figure, for instance, they assimilate the features of the persona that are similar to their ideal selves (Derrick et al., 2008; Young, Gabriel, & Sechrist, 2012). Therefore, parasocial interaction can bring individuals closer to their ideal personalities in a similar way to connections with actual relationship partners (Drigotas, Rusbult, Wieselquist, & Whitton, 1999; Gabriel, Carvallo, Jaremka, & Tippin, 2008). Furthermore, attachment styles influence parasocial bonds in much the same way as they influence regular relationships (Gabriel et al., 2008); audience members with an anxious-ambivalent bonding style form relatively strong relationships with media personae while those with an avoidant attachment style are the least likely to develop parasocial bonds (Cole & Leets, 1999). Individuals with an anxious-ambivalent attachment style or low self-esteem might be especially drawn to parasocial affiliation since these non-reciprocal connections present little to no threat of rejection (Cole & Leets, 1999; Derrick et al., 2008).

Compared to transportation, which rather refers to one's immersion into a story per se (Green & Brock, 2000), parasocial interaction focuses more on the imagined relationship with a media figure, but both constructs are positively correlated (Greenwood & Long, 2009). In addition, parasocial affiliation does not require emotional absorption into a particular narrative, rather is based on a feeling of kinship with the media figure (Greenwood & Long, 2009).

Taken together, audience members can become attached to a certain media persona through regular parasocial interaction. Even though this kind of imagined friendship is non-reciprocal, it may alleviate loneliness and provide further social benefits to the initiator that are similar to those of actual relationships. Parasocial connections, for instance, allow people to feel closer to their ideal selves and offer a safe space to experience social connection to individuals with low self-esteem or an anxious-ambivalent attachment style.

2.4.3 Symbolic reminders of real relationship partners

The most tangible surrogates for direct social interaction are objects that represent or become associated with an actual relationship partner such as children's drawings, personal gifts, or the visualisation of one's social contacts on social media (Kim & Lee, 2011; Nadkarni & Hofmann, 2012). What makes these (symbolic) representations important is their psychological link to a close other (Gabriel et al., 2016). Interacting with those symbols renders a significant other psychologically present by activating a mental image of that person (Fitzsimons & Bargh, 2003). This internal representation is sufficient to influence self-regulation and activate interpersonal goals that are then pursued unconsciously (Shah, 2003). Hence, relationship partners strongly influence thoughts, feelings, and motivations, even when they are not physically present (Fitzsimons & Bargh, 2003). Therefore, feelings of belonging can be replenished, for instance, simply by remembering a positive social connection or interaction which can be facilitated or triggered by (symbolic) representations of close others (Twenge et al., 2007). Symbolic social behaviours - such as looking at photos of loved ones - correlates positively with the need to belong (Gardner, Jefferis, & Knowles, 2004). In sum, the need for interpersonal connection can be satisfied at least partly by visualising an absent relationship partner which can be triggered or facilitated by direct representations (i.e., photos) or objects that we associate with that person.

Even a seemingly neutral object can serve a similar purpose when it becomes successfully associated with a real relationship partner (Troisi & Gabriel, 2011). This can be a specific dish, for instance, that satiates not only physical but also emotional needs and therefore is called comfort food (Merriam-Webster, 2018). Dutch students, for instance, find chocolate consoling while noodles are a comfort ingredient for Singaporean adults (Ong, IJzerman, & Leung, 2015). This type of food is often consumed after experiencing negative emotions (Dubé, LeBel, & Lu, 2005; Evers, Stok, & De Ridder, 2010). Even merely imagining ingesting chicken noodle soup has been suggested to alleviate loneliness in US Americans who have positive associations with relationships, i.e., who are securely attached (Troisi & Gabriel, 2011). Further, individuals with a secure attachment style were more likely to consume comfort food after experiencing social rejection (Troisi, Gabriel, Derrick, & Geisler, 2015). The (unconscious) association of certain foodstuffs with primary caregivers has been proposed as a reason for their loneliness-alleviating effect on securely-attached adults. In sum, any object that is consciously or unconsciously associated with a close relationship partner seems to support coping with loneliness or social rejection by rendering that connection mentally present.

2.4.4 Summary of symbolic social behaviour

In this chapter, three different forms of symbolic social interaction with media have been introduced. The first opportunity presented was to gain a sense of

belonging by identifying with a character of a story or the group to which a character belongs when reading fiction, watching television, enjoying movies, listening to audiobooks, or going to the theatre. Second, parasocial interaction with real or fictional figures in the news, one's favourite series, or another beloved television programme presents another chance to experience an ersatz social connection. Third, photos of close others in social media or elsewhere as well as objects in our everyday life with which we associate a significant other can fulfill our need to belong, at least temporarily, by rendering real relationship partners psychologically present. While the reminders of actual relationships and empathic identification with mediated characters have been studied relatively well, the psychological mechanism behind para-social attachment is still not fully understood (Giles, 2002). So far, research has mostly investigated the social effects of engaging with television programmes and literary fiction, but music might provide similar benefits to its audiences. Hence, the focus of attention switches to social aspects of music in the following chapters.

2.5 Social aspects of music

A sense of social interaction may be at the core of every form of engagement with music, since human agency is necessary for almost any kind of musical performance (Overy & Molnar-Szakacs, 2009). Thus, a musical performance can be understood as an encounter between people through the medium of nonverbal sound (Small, 1998). While one would easily agree that joint music making has an interpersonal component, the social motives for private music listening may be less obvious. Yet, listeners use music actively for social needs such as friendship formation (Selfhout, Branje, ter Bogt, & Meeus, 2009), identity construction (Arnett, 1995; DeNora, 1999; Krueger, 2011), or emotional self-regulation (Krueger, 2011; Saarikallio, 2010; Thayer, Newman, & McClain, 1994; van Goethem & Sloboda, 2011). The various social functions of different forms of musical engagement are summarised in the following section.

2.5.1 Social benefits of musical activities

Performing in a group provides its members diverse social benefits (for an overview see Koelsch, 2013). Music has been, for instance, theorised as a means of social and emotional communication that may function as a sort of social cement (Huron, 2001; Overy & Molnar-Szakacs, 2009; Schäfer, Sedlmeier, Städtler, & Huron, 2013). Empirical evidence supports this claim by demonstrating that playing music in a group promotes prosocial behaviour (Kirschner & Tomasello, 2008) and increases social cohesion (Spychiger, Patry, Lauper, & Zimmermann, 1993). Even four-year-old children show more cooperative, helpful, and empathic behaviour after sharing a musical, compared to a story-telling, experience (Kirschner & Tomasello, 2010). Furthermore, communal singing enhances the

sense of group identity, friendship, and social support that reduces feelings of isolation and loneliness (Clift, 2012; Clift et al., 2010).

This social cohesion seems to be partly promoted through interpersonal synchronisation (Tarr, Launay, & Dunbar, 2014), which can enhance the positive evaluation of interaction partners and fosters cooperation in groups (Wiltermuth & Heath, 2009). Music can provide an external rhythmic framework that facilitates this rhythmic synchronisation of movements (Tarr et al., 2014). Additionally, synchronising to a beat seems to be rather a social than an automatic motoric process since adults as well as children tend to synchronise more accurately with a human partner than with a music recording or a drumming machine (Himberg, 2006; Kirschner & Tomasello, 2009) and individuals are inclined to synchronize their movements with each other even in a context where maintaining one's own initial tempo has priority and even when their initial tempi are very different (Spiro & Himberg, 2012).

Musical group activities promote not only the coordination of body movements but also the synchronisation of mood states in large groups of people (Huron, 2001; Krueger, 2011; Mithen, 2006). Joint music making has always been used in rituals, for instance, to modulate physiological arousal or harmonise emotions in order to achieve a larger group goal (Huron, 2001). Ritual music has further been proposed to function as a display of resources, to facilitate courtship, and to control and channel individual aggression (Dissanayake, 2006). Huron (2001) proposed that the latter might be achieved, for instance, through campfire singing, which is assumed to reduce interpersonal conflicts in groups. Further, singing and dancing were already used as a means of expressing group identity by our ancestors (Huron, 2001).

Taken together, joint music making fosters group solidarity, prosocial behaviour, and group work. Further, it aids in establishing behavioural coherency, and harmonises emotional states in large groups. These social benefits of musical group activities might have had an important survival value for our ancestors in the distant past. For instance, increasing the effectiveness of collective actions, such as defending against a predator or attacking a rival clan, would explain why they are part of evolutionary theories about the origin of music (Huron, 2001; Roederer, 1984). Since speakers strongly adapt their turn-taking rhythms in a story-building game (Himberg, Hirvenkari, Mandel, & Hari, 2015) even when they can only hear (and not see) each other, it is conceivable that rhythmic or emotional synchronisation also occurs while individuals engage with recorded music just by themselves. Elvers (2016), for instance, proposed that audience members may obtain a sense of connection as a result of synchronising with a musician during solitary musical engagement.

Regarding music listening, social functions are also considered to be among the most important objectives (Boer & Fischer, 2010; Hargreaves & North, 1999; Schäfer et al., 2013). Yet, they might be underrepresented in self-report studies since social motives do not always operate consciously (Gabriel et al., 2016). However, group listening experiences (e.g., in concerts) have been shown to induce feelings of togetherness (Batt-Rawden, DeNora, & Ruud, 2005; Sloboda,

Lamont, & Greasley, 2008) and contribute to social cohesion in families and peer-groups (Boer & Abubakar, 2014). Furthermore, people listen to specific types of music to express their values and their identity to others or feel close to their friends (Schäfer et al., 2013). Additionally, shared musical preferences have been shown to promote bonding (Boer et al., 2011) and support the creation of social identities (Lonsdale & North, 2011; Tarrant, North, & Hargreaves, 2001; Tekman & Hortaçsu, 2002; Zillmann & Gan, 1997).

To summarise, musical taste is communicated as a means of expressing identity, values and group membership. Further, joint listening experiences promote bonding and group cohesion. Hence, music has the potential to unite and define social groups, generations, or even cultures (Molnar-Szakacs & Overy, 2006). While the collective benefits of group activities are easily comprehensible, the social function of private music listening is less obvious. Yet, even solitary music listening can engage social cognition.

2.5.2 Social music cognition and its neuronal basis

Several theoretical accounts advocate private music listening as a mediated form of a social encounter (Aucouturier & Canonne, 2017; Leman, 2007; Levinson, 2006; Wallmark, Deblieck, & Iacoboni, 2018). According to *persona theory*, audience members conceive music as the expression of a mental state of a person or a person-like entity (Levinson, 2006) that may be the performer, composer, or a purely fictional figure specific to that piece of music (Cochrane, 2010). The form of imagery depends on the background of the listener and the listening environment, among other things; a violinist may, for instance, imagine him- or herself expressing an emotion heard in a violin concert while a listener that is familiar with the composer's biography may conceive the same musical passage as expressive of the artist's emotion induced by a specific biographical event (Cochrane, 2011). Likewise, a widely distributed reception theory for popular music holds that pop songs express emotional experiences of the performer(s) (Dibben, 2006). Furthermore, today's pop stars in their iconic role seem to be good candidates for musical personae since the musical celebrities' personal lives, as part of its public persona, are disclosed to such an extent that listeners can readily perceive pop songs as communicating the singer's inner thoughts and feelings (Dibben, 2012; Elvers, 2016). It is conceivable that individuals who follow their favourite pop stars in the media, develop a form of parasocial attachment to these celebrities. In sum, perceiving musical sounds as the expression of a real or fictional person's psychological state corroborates the idea of music as a social surrogate.

Besides persona theory, there are several approaches to social music cognition that are based upon the tight link between musical expression and expressive body movements. *Resemblance theory*, for instance, presumes that listeners can infer the expression of a certain passage of a composition from the expressive gesture since it resembles a human movement or vocal utterance (Davies, 1994). Similarly, it has been proposed that listeners unconsciously extract information about the performer's underlying expressive movement since the auditory signal

supposedly activates the neuronal networks in the listener responsible for sound production (Overy & Molnar-Szakacs, 2009). This *Shared Affective Motion Experience* (SAME) is assumed to give rise to the sense of the presence of another person, their actions, and their affective state according to Overy and Molnar-Szakacs (2009). Both accounts suggest that the impression of agency during music listening forms based on the perception of a musical passage in terms of the expressive movements that were involved in its production. In line with the SAME model, the *simulation theory of musical expressivity* (Cochrane, 2010) puts forward that listeners internally and automatically reenact the expressive behaviour conveyed by the music with the help of the fronto-parietal mirror-neuron system (MNS). Since the human MNS is active both during the execution and observation of movements in conspecifics, it allows individuals to understand the behaviour of others (Rizzolatti & Craighero, 2004). Together with the limbic system, with which the MNS is connected through the insula, the MNS has been proposed as the neuronal basis for empathy (Carr, Iacoboni, Dubeau, Mazziotta, & Lenzi, 2003) and allows us to feel connected to those around us (Molnar-Szakacs & Overy, 2006). During music listening, this empathy network is assumed to simulate the way that it feels to produce the musical piece. Since this simulation mechanism originally evolved to recognise the actions and emotions of other people, it may also give rise to the idea of another person when people engage with music (Cochrane, 2010). In other words, it is conceivable that listeners perceive a sort of agency in melodies because they activate neuronal empathy networks that developed in order to understand actions and feelings of other humans.

Besides imagination and simulation, identification has been proposed as psychological mechanism triggered by music listening. Audience members are presumed to identify with the performer perceived as living through an emotional experience (Elvers, 2016; Scherer & Zentner, 2001). This empathic process might create a sense of intimacy between performer and listener much like the viewer's identification with a media persona (Greenwood & Long, 2009) or the reader's identification with a fictional character (Mar & Oatley, 2008; see also chapter 2.4.1).

Empirical support for these theories is still scarce. However, Aucouturier and Canonne (2017) recently provided experimental evidence for the involvement of social processes in music perception by demonstrating that musically trained and untrained listeners can decode relational intentions from dyadic musical interactions. Prolonged playing together, for instance, was mentioned as a feature of affiliative behaviours which suggests that music can directly convey relational intentions (Aucouturier & Canonne, 2017). Additionally, there is empirical evidence that the degree of cognitive empathy correlates with the strength of affective responses to the music (Miu & Balteş, 2012); a recent study showed that neuronal empathy networks of highly empathic people are more active during music listening than those of low empathisers (Wallmark et al., 2018). These findings underline the importance of empathic processes during music listening.

Taken together, several well-established theories suggest that private music listening triggers unconscious social cognitive processes such as the empathic

identification with a musician, or the simulation of body movements or emotions of a fictional or real musical agent. Further, there is empirical evidence suggesting that music perception can engage empathic and social mental operations that may convey the impression of the presence of another person. Those preliminary findings suggest that even solitary musical engagement could positively influence listeners' notion of interpersonal closeness which can be further backed up by developments in music recording and playback techniques.

2.5.3 Physical proximity and music recordings

Whenever individuals hear an acoustic signal, they pick up information about their environment, may it be real or virtual (Dibben, 2012). Interpersonal distance, for instance, is perceived in computer-generated environments just as in the real world (Wilcox, Allison, Elfassy, & Grelik, 2006; Yee, Bailenson, Urbanek, Chang, & Merget, 2007). Yet, the auditory perception of interpersonal distance can be modified by particular recording techniques as well as the way of presenting an audio recording (Dibben, 2006, 2012). Presenting happiness-inducing music over headphones, for instance, can make the listener feel at ease with less interpersonal distance allowing them to feel more comfortable in crowded places such as public transportation (Tajadura-Jiménez, Pantelidou, Rebacz, Västfjäll, & Tsakiris, 2011). Similarly, listening to the news through headphones instead of loudspeakers, for instance, seems to shorten the perceived distance between the listener and the news anchor, which in turn provides a more intense, arousing, and pleasant experience (Kallinen & Ravaja, 2007). Hence, the rendering through headphones appears to offer a more intimate listening experience than playback via speakers.

Additionally, the perception of intimacy with a speaker or musician can be supported by specific recording techniques such as the use of a separate microphone for the singer, which allows sound engineers to bring the vocalist to the foreground and to modify the respective audio track differently from other sound tracks. Moreover, the technical compression of a singer's voice amplifies sounds that are usually only audible in close proximity to the performer (e.g., breathing), which makes the listener feel physically close to the artist (Dibben, 2012). The auditory perception of distance in music recordings is further defined by reverberation, loudness, and the timbre of the sound source (Rumsey, 2001) and the sound reproduction of a small space (with low reverberation) adds to the illusion of intimacy with the musician (Dibben, 2012).

To summarise, particular music recording and editing techniques are employed to convey a sense of intimacy with the performer(s) to the listener(s) which can be enhanced further by using headphones instead of loudspeakers. The application of technical means to provide a more intimate sound experience implying physical proximity to the performer suggests the function of private music listening as a potential remedy for loneliness.

2.5.4 Music's potential for social surrogacy

The capacity of music to alleviate feelings of loneliness has not yet been in the focus of empirical investigations despite empirical hints to the connecting power of solitary musical engagement and to the practical use of music as an aesthetic surrogate for social interaction. Listening to preferred music, for instance, is one of the most common activities when feeling lonely (Derrick, Gabriel, & Hugenberg, 2009) and feelings of belonging have recently been identified as an essential part of the pleasure that music listening can generate (Saarikallio, Maksimainen, & Randall, 2018). Further, getting company is one of the most common listening motives in everyday life (Juslin, Liljeström, Västfjäll, Barradas, & Silva, 2008) and a major reason for engaging with music among chronic pain sufferers (Mitchell, MacDonald, Knussen, & Serpell, 2007) and older adults (Groarke & Hogan, 2016). In other words, people commonly turn towards music to *get company* or cope with a lack thereof.

Additionally, music has been described as a virtual companion or an understanding and valued *friend* in qualitative interviews (Lippman & Greenwood, 2012; Sloboda, 1992; Van den Tol & Edwards, 2014) which suggests that musical agents can be experienced as empathetic others by audience members (Lee, Andrade, & Palmer, 2013). Furthermore, people make person-like attributions to music (Watt & Ash, 1998) which corroborates the notion of music as a social surrogate. Moreover, music's capacity to provide belonging seems to be supported by *lyrics* since texts of nostalgic songs, for instance, have been shown to promote feelings of social connectedness, which increased self-esteem and optimism in turn (Cheung et al., 2013). Similarly, optimistic messages in lyrics of sad songs have been reported to convey hope to sad or lonely individuals (Greenberg, Rentfrow, & Baron-Cohen, 2015; Van den Tol & Edwards, 2011). In addition, adolescents cope with loneliness, for instance, by listening to songs whose lyrics apply to their own lives (Lippman & Greenwood, 2012; Zillmann & Gan, 1997). In other words, musical pieces whose lyrics resonate with the youngsters' own experience are considered as meaningful and help adolescents to feel less lonely (Lippman & Greenwood, 2012).

To summarize, previous research demonstrates that music is a popular means to gain company and sometimes even feels like an empathic other. Further, resonating song lyrics seem to support the conveyance of understanding and connectedness through music. Combined with the social cognitive processes that music listening can operate (see chapter 2.5.2), it is conceivable that musical pieces which resonate with the listeners' experiences validate their emotions in a similar way like an empathic friend would do. Empathic others are usually sought out after painful social experiences in order to share one's negative feelings, find understanding, and receive emotional validation (Hill, 1991). Further, lyrics that audience members can relate to might facilitate identification with a musical agent which provides a sense of belonging in turn. Hence, musical pieces may provide a sense of empathic company by conveying the presence of an understanding other and validating the listener's emotions at the same time.

2.5.5 Social surrogacy and the paradox of pleasurable sadness

The conveyance of the presence of an empathic companion has also recently been proposed as motivation for engagement with nominally sad music (Lee et al., 2013). In a series of experiments, Lee, Andrade, and Palmer (2013) demonstrated that the participants' liking for sad music paralleled their preference for an empathic friend in different situations of either interpersonal (e.g., the loss of a loved one) or non-interpersonal distress (e.g., failure to achieve a personal goal). After interpersonal distress (i.e., a social loss), the preference for sad songs correlated highly with the liking of an empathic other, which led the authors to suggest that sad, mood-congruent music may serve as an aesthetic surrogate for an empathic friend after experiencing a social loss (*mood-congruency hypothesis*; Lee et al., 2013). Thus, affect-congruent sad musical pieces seem to have a high potential for social surrogacy.

Additionally, engagement with sad music has been compared with the experience of being with a good friend (Van den Tol & Edwards, 2011) and adolescents report experiencing solace through music listening (Saarikallio & Erkkilä, 2007). The consolatory effect has been proposed as a unique feature of sad songs and is assumed to stem from mood-sharing or virtual social contact provided by sad music (Taruffi & Koelsch, 2014). Hence, it stands to reason that listening to mood-congruent, comforting music after experiencing a social loss can provide company akin a virtual empathic friend.

The presumed consolation and connectedness that the engagement with sad songs provides also serve as a potential explanation for the enjoyment of sad music. The appeal of sadness-inducing music and artworks that elicit negative emotions more generally (e.g., tragedies, dramas, and horror) is puzzling since people usually strive to avoid those feelings in their own lives. This mystery has intrigued great minds since ancient Greece and motivated plenty of speculative accounts that attempt to resolve the so-called paradox of tragedy (Smuts, 2009). Whereas emotivists (e.g., Konečni, Levinson, Scherer) assert that pieces of art elicit so-called aesthetic emotions - real emotional responses that differ from those experienced in everyday life - cognitivists (e.g., Meyer, Kivy, Scruton) hold that artworks simply express or represent emotions and audiences make an attribution error by mistaking the expressed emotion as their own (Scherer & Zentner, 2001). Consequently, musical cognitivists describe a piece as "sad" when its musical features express sadness whereas musical emotivists call a musical piece "sad", when it makes them *feel* sad. In the last 30 years, there has been a considerable amount of empirical studies on the reasons for engaging with sad music (Brattico et al., 2016; Eerola & Peltola, 2016; Garrido & Schubert, 2011; Kawakami, Furukawa, Katahira, & Okanoya, 2013; Taruffi & Koelsch, 2014; Van den Tol & Edwards, 2011; Vuoskoski, Thompson, & McIlwain, 2012), dramatic films (de Wied, Zillmann, & Ordman, 1995; Goldstein, 2009; Greenwood, 2010; Hanich, Wagner, Shah, Jacobsen, & Menninghaus, 2014; Oliver, 1993; Schramm & Wirth, 2010), or tragic literature (Goldenberg, Pyszczynski, Johnson, Greenberg, & Solomon, 1999). Hence, it is desirable to get an overview of the existing theories and their empirical basis.

In sum, previous research assigns friend-like, empathic qualities to sad, consoling musical pieces which renders them potential social surrogates. Providing sad listeners mood-congruent, comforting company would also represent a good reason for the seemingly paradoxical enjoyment of music-induced sadness. The puzzling appeal of sadness-evoking artworks has given rise to many theories and recently motivated empirical research. However, social surrogacy has not yet been considered as an explanation for the apparent paradox of pleasurable sadness.

2.6 Aim of this dissertation

The previous chapters have made the case for social needs as an important motivation for the engagement with music and other media. It has been argued that the mental processes involved in the engagement with literary fiction or television programmes offering audience members a sense of belonging, can be categorised under three main mechanisms: i) remembering actual relationship partners, ii) identification with a fictional or real character, and iii) parasocial relationships, i.e., imagined friendships with media personae. It is conceivable that similar psychological processes take place during private music listening: Music has already been shown to trigger personal memories including significant others and therefore might act as a symbolic reminder of real relationship partners (DeNora, 1999; Garrido & Davidson, 2019; Groarke & Hogan, 2016; Janata, Tomic, & Rakowski, 2007; Juslin & Västfjäll, 2008). Further, it is imaginable that listeners achieve a sense of connection through identification with an actual musician or a more abstract, imaginary musical persona (Elvers, 2016; Scherer & Zentner, 2001). Finally, famous musicians such as pop stars are admired like celebrities to whom audience members might develop parasocial attachments (Giles, 2002). Hence, there is preliminary evidence that private music listening can potentially offer a sense of connection through all three mental mechanisms that convey feelings of belonging during engagement with other media.

Furthermore, the different cognitive processes that are proposed to be triggered by music listening and that potentially support identification processes or provide the notion of an intimate connection with a real or fictional musical agent have been presented. These theoretical considerations about social music cognition have been substantiated by experimental evidence for the involvement of social and empathic mental operations in music perception. In addition, the link between social needs and music listening has been further corroborated by studies demonstrating music listening as a common means for different population groups to have company in everyday life. Taken together, there is an accumulation of empirical suggestions to the social benefits of musical engagement as well as prior evidence that music listening could initiate similar psychological processes or mental mechanisms (terms are used interchangeably) to those known to provide a sense of belonging while engaging with other types of media. In combination with the theorising about social music cognition, it seems likely that

music acts as a social surrogate and therefore is a potential remedy for unpleasant feelings of loneliness. Based on the findings presented in the previous chapters, it is conceivable that even solitary engagement with familiar music can convey a sense of belonging and reduce feelings of loneliness respectively; in other words, it may act as an aesthetic surrogate for social interaction. Consequently, the relevant research question reads: "Can the solitary engagement with familiar music afford listeners a sense of belonging?" If this was the case, the ensuing inquiry would seek the answer to the following question: "Is an individual's sense of belonging maintained or restored during music listening in a similar way to engaging with other media?"

The current work sought to converge evidence for these proposals by adopting a multi-method approach which allowed for simultaneously investigating the social motives for (solitary) music listening and testing a concrete hypothesis about music's social characteristics. This work emphasises sad, consolatory music because previous research assigns this kind of music a strong potential for friend-like, empathic qualities. Furthermore, pleasurable experiences induced by sad music in general were relevant for this work as it aimed to test and situate a new, socially-based proposal for the appeal of sad music. Hence, an overview of the existing theories about the enjoyment of music-induced sadness from different disciplines, and their empirical basis, constituted one part of the work. Overall, this dissertation aimed to elucidate the social functions of private music listening.

3 SUMMARY OF THE EMPIRICAL WORK

The point of departure for this dissertation was a research project about the paradox of pleasurable sadness in relation to music. Within the frame of this project, several empathy-related mechanisms that are hypothesised to be involved in the enjoyment of music-induced sadness were tested. One of these mechanisms was music's capacity to provide company similar to that of an empathic friend (Lee et al., 2013). In order to position this new theory, an overview of the existing explanations for pleasurable experiences induced by sad music and their empirical basis was needed. Hence, an integrative review of the previous literature, study I, was performed which took social surrogacy through melancholic music into account (see chapter 3.1).

After positioning this recently proposed theory into the body of existing literature, it seemed plausible to broaden its empirical basis. Therefore, a listening experiment was designed in order to test the hypothesis that engaging with comforting music after experiencing a social loss provides empathic companionship (see chapter 3.2).

Since the results of the experiment suggested that not only comforting pieces can provide company to the listeners, but that music listening in general seems to induce feelings of connectedness, we were interested in the psychological mechanisms through which familiar melodies could provide a sense of belonging. Thus, an exploratory survey was devised which included an extensive questionnaire on the social motives for engagement with music, television, films, and literary fiction. The following chapters summarise the rationales, methodological approaches, and results of each investigation.

3.1 Study I: An integrative literature review

The first study in this project was a literature review. Different types of review methods are available for music psychology research; while systematic reviews seek to systematically search for, evaluate, and synthesise scientific evidence (e.g.,

Sachs, Damasio, & Habibi, 2015), meta-analyses are used to statistically combine the results of quantitative investigations (e.g., Gold, Voracek, & Wigram, 2004; Grant & Booth, 2009). Another type, the integrative review, permits the inclusion of diverse methods (i.e., experimental and non-experimental research), thereby bridging the gaps between related research fields (Russell, 2005). Furthermore, it allows for the evaluation of the strength of scientific evidence, and the identification of gaps in current research and the need for future investigations. This approach has been criticised for the poor description of methods for analysis, synthesis, and conclusion-drawing (Whittemore & Knafl, 2005). The integrative review was the method of choice for the first study since the evidence for pleasurable experiences induced by sad music has various forms (e.g., qualitative interviews, behavioural experiments, physiological measurements) and comes from different scientific fields (from philosophy and social science to biology).

3.1.1 Aim

The principle aim of this study was to integrate recent literature discussing pleasurable affective experiences induced by sad music to get a comprehensive understanding of the seemingly paradoxical appeal of music-induced sadness. Further, the review aimed to provide a conceptual framework for upcoming investigations whilst identifying the gaps in current evidence that should be filled by future research.

3.1.2 Method

A procedure originally developed by Cooper (1982) and adjusted to integrative reviews by Whittemore and Knafl (2005) served as the framework for conducting the literature review. It included five consecutive steps (problem identification, literature search, data evaluation, data analysis, and presentation) that will be outlined below (Whittemore & Knafl, 2005). First, the research problem that the review was addressing needed to be clearly identified. The purpose was to summarise the elements involved in the enjoyment of sadness which are associated with music and how these relate to each other. Specifying the review purpose to provide focus and boundaries for the research process was the next necessary step. Our motivation was to bring together *all* possible explanations for the phenomenon at hand, may they be theoretical or empirical, in order to obtain a comprehensive view of the state-of-the-art.

In the second step, the relevant literature was gathered. It is important to collect all available sources in order to avoid personal selection biases. The five experts cooperating in this study had different backgrounds (from musicology and psychology to neuroscience) and collated the sources from the area matching their expertise. The literature search is not documented in the final version of the article since reporting the results already took so much space that we needed to spare methodological justifications.

In step three, the quality of the collected primary sources, the data, was evaluated. Since the data came from different research areas and involved various methods, the evaluation was very complex. Therefore, we handled proposed theories differently to empirical findings. Apart from the philosophical explanations (e.g., catharsis) that are discussed in detail elsewhere, theories were evaluated mostly based on the extent of supporting empirical work reported in the literature. In addition, their value was evaluated by showing their scope and limitations. However, the empirical evidence was weighted according to the soundness of the employed method.

Data analysis was the fourth step. It is one of the least developed yet one of the most difficult aspects of the process (Whittemore & Knafl, 2005). First, a classification system for managing data of various methods needed to be established. Previous reviews with a similar focus were treated separately from the other data and critically discussed in the introduction. After organising the primary sources according to the discipline of origin (biology and neuroscience, psychology and social science, cultural science), they were systematically analysed and compared in order to identify common themes. According to these themes, the primary sources were then divided into subgroups (e.g., beauty), in which the evidence for a certain theme was reviewed and synthesised into mechanisms that are summarised. Second, the key elements, employed methods, amount of evidence, and caveats across the three explanatory levels were summarised (see *table 1*). Third, the data of all explanatory levels were compared in order to identify relationships between the levels and build a logical chain of evidence.

In the final step of the review process, the results of the analysis were synthesised and presented in the form of a model that comprehensively portrays the process through which individuals derive pleasure from music-related sadness (see Figure 1 on p.16 of the original manuscript). Explicit details from the data and evidence to support the conclusions were provided to demonstrate how the findings were reached, allowing the reader to ascertain that the conclusions of the review did not exceed the evidence (Oxman, 1994).

3.1.3 Results

To understand the underlying mechanisms for the enjoyment of music-induced sadness, an integrative review was needed that encompasses explanations from different fields and that systematically organises and critically discusses theoretical proposals and empirical evidence. In order to manage the sources with various methods, the compiled material about the pleasure derived of music-related sadness was divided into two categories: i) previous reviews with a similar topic and ii) primary, mostly empirical, sources. Previous reviews proposed explanations for the paradoxical appeal of sadness-inducing music on different levels, but the accounts were always isolated since most of the research had been conducted within one discipline e.g. philosophy at a time. Additionally, explanations proposed in other art-related fields such as literature cannot simply be applied to music since many of them rely on narratives or semantics that are often

absent from music. Finally, most of the existing accounts failed to address the underlying mechanisms of emotion induction.

After identifying the limitations of former reviews, the primary data for the current review (article I) were systematised according to the research field of origin: i) biology and neuroscience, ii) social sciences and psychology, and iii) cultural-historical approach (see Table 1). Therefore, the explanations provided in the literature were divided into three parts; the first part covers explanations from an evolutionary perspective and evaluates the biological correlates of sadness on the endocrinological, physiological, and neuronal level. In the second part, evidence for the role of empathy, feelings of being moved, and mood regulation strategies was reviewed. In the third part, the aspects of musical traditions as part of culturally transmitted knowledge, music as cultural narrative for tragedy, and the role of beauty and aesthetic appreciation were discussed.

Within each discipline, common themes which determined the subgroups of each explanatory level were established through content analysis and comparison of the primary sources.

The empirical support for and contribution of each of these aspects to the explanation of the enjoyment of sadness in relation to music was critically evaluated. Key aspects and mechanisms within each discipline were carved out and summarised in Table 1.

TABLE 1 Summary of key mechanisms and evidence across the three explanatory levels with respect to pleasure associated with sad music

| | Biological | Psycho-social | Cultural |
|-------------------|--|---|---|
| Level | Individual | Interpersonal | Collective |
| Mechanisms | Homeostasis | Mood regulation, empathy, memories, social surrogates | Shared meanings via learning and cultural ratcheting |
| Measures | Neural, hormonal, physiological | Behaviours, self-reports (e.g., pleasure, being moved), narratives | Historical and ethnographic evidence |
| Evidence | Non-existent, or pertaining only to actual sadness or music-induced pleasure | Positive evidence for mood repair. No evidence for social surrogacy and nostalgia, yet. Indirect evidence for empathy | Some supporting evidence in recent Western history and self-reports |

The accounts of biological, psychosocial, and cultural research traditions were compared. In general, contrasting the disciplines revealed that evidence is conceptualised differently in each research field. While explanations on the biological level capitalised on measurable, natural scientific processes, evidence on the psychosocial level mostly stemmed from self-reports, indirect measures, or behavioural experiments since most psychological processes cannot be directly

observed. Most cultural accounts were based on established theories and traditions in Western societies. Naturally, the explanatory power of the different fields varies.

Through comparison, it also became apparent that some concepts, for example consolation, are used in several research areas but have different meanings at different levels which bears the risk of false analogies. With this in mind, *simulation* was identified as a key process across disciplines. While simulation is at the heart of Mar and Oatley's (2008) simulation theory which suggests that fictional events operate the same biological and cognitive machinery as non-fictional emotions, it is also at the core of the enjoyment-moderating personality trait empathy, and even cultural explanations rely on the ability to simulate fictional worlds. Additionally, the process and time-scale of the transformation of a nominally negative emotion (sadness) into a pleasurable experience in relation to music was identified as a gap. Based on our framework, we proposed a gradual hedonic shift with a limited range on each level where all levels are needed to understand the phenomenon as a whole. The proposed framework further suggests that the levels of explanation are distinguishable yet interconnected. There is not enough evidence yet for links between the levels, but the integrative review acknowledges the limits of the diverse explanations and shows possible lines of investigation.

To summarize, our integrative framework for the enjoyment of music-related sadness includes three levels of explanation: biological, psycho-social, and cultural. Each explanatory level contributes to the phenomenon in a specific, yet interconnected way. The connections between the levels of explanation as well as the time course of the affective transformation from a nominally sad emotion to a pleasurable experience are yet to be specified. We suggest simulation as a core mechanism with different manifestations on different levels and a cascading impact of overlapping and simultaneous processes at the different stages. Therefore, our integrative review provides a conceptual tool and contributes to a new understanding of the phenomenon of concern.

3.2 Study II: The Experiment

The second study of this project employed the experimental method which is popular in psychological research. The uniqueness and strength of experiments lies in their explanatory power. While other methods such as qualitative interviews provide descriptions of human experiences and covert behaviour, experiments allow one to tackle the causal relationships of overt and covert behaviour (Davis & Bremner, 2006). This explanatory capacity is based on the ability to ensure that only one parameter, the independent variable, varies systematically across the different conditions (Davis & Bremner, 2006). Another advantage of laboratory experiments (compared to e.g. field studies) is that potential confounding factors such as noise can be controlled especially well (Haig, 2014a). If

one cannot ensure that their influence distributes uniformly over the various conditions through randomisation, confounding variables can also be controlled for statistically for example by including them as covariates in an Analysis of Variance (Haig, 2014a). In sum, the experimental method is recommended for testing specific hypotheses or establishing causal explanations and several methodological and statistical procedures are available to control for potential confounding variables.

3.2.1 Empirical rationale

In general, music selection follows the mood-congruency principle (Cantor & Zillmann, 1973; Thoma, Ryf, Mohiyeddini, Ehlert, & Nater, 2012). However, previous research has yielded inconsistent results regarding music preferences of sad individuals; some studies suggest a preference for melancholic music (Chen, Zhou, & Bryant, 2007; Garrido & Schubert, 2011; Gibson, Aust, & Zillmann, 2000; Hunter, Schellenberg, & Griffith, 2011) while others report an inclination towards happy or relaxing pieces among sad participants (Knobloch & Zillmann, 2002; Schellenberg, Peretz, & Vieillard, 2008). These contradicting findings can be partly explained by interindividual differences in personality and emotion regulation styles (Chen et al., 2007; Garrido & Schubert, 2011; Thoma et al., 2012; Vuoskoski et al., 2012). A new promising explanation for the observed inconsistencies focuses on the characteristics of the event that evokes the emotion (Lee et al., 2013). Like any other emotion, sadness can be triggered by a range of situations that, in turn, influence the type of mood-correcting behaviour in which the listener engages (*situation-symptom congruence hypothesis*; Keller & Nesse, 2006). Sadness elicited by a social loss, so-called interpersonal sadness, for instance, is associated with a greater desire for social interaction (Gray, Ishii, & Ambady, 2011; Rimé, 2009) than sadness triggered by for example a failure to professionally succeed, so-called non-interpersonal sadness (DeMarco, Taylor, & Friedman, 2015). At the same time, interpersonally sad individuals seem to be more inclined to listen to mood-congruent, sad musical pieces than others facing non-interpersonal sadness, and their preference for sad songs apparently correlates with the liking of an empathic friend (Lee et al., 2013). Taken together, these findings suggest that affect-congruent musical pieces may act as a surrogate for an empathic friend in interpersonally sad situations (*mood-congruency hypothesis*; Lee et al., 2013). Since the mood-congruency hypothesis is based on correlational data that do not allow for causal conclusions, there was a need for an experimental study testing this specific hypothesis about the appeal of melancholic music to sad individuals.

3.2.2 Aim

Following the empirical rationale reported above, the listening experiment reported in article II aimed at elucidating whether private engagement with comforting music can provide individuals a sense of empathic company after experi-

encing a social loss, a capacity assigned to mood-congruent, 'sad music' by previous research (Lee et al., 2013; Taruffi & Koelsch, 2014). Since both the musical characteristics of (Peltola, 2016; Weth, Raab, & Carbon, 2015) and the listeners' reactions to 'sad music' (Eerola & Peltola, 2016) are very diverse, the uniformity of the concept 'sad music' is questionable. Thus, in the current experiment the phenomenon is approached from the perspective of musical emotion regulation. The focus is on the comforting function since this emotion regulation strategy is the most likely to foster the choice of music that may provide a sense of empathic company (Hanser, Ter Bogt, Van Den Tol, Mark, & Vingerhoets, 2016; Saarikallio & Erkkilä, 2007). Accordingly, the main hypothesis reads as follows: *Engaging with comforting music after experiencing a social loss provides a sense of empathic company which shows as a significant interaction of type of sadness and listening strategy in the analysis of state loneliness and empathy.*

Furthermore, we expect a main effect of listening strategy on mood as reflected in the participants' report of more happiness and less anxiousness after listening to distracting music since distraction is known as a strategy that repairs mood very effectively (Augustine & Hemenover, 2009).

3.2.3 Method

3.2.3.1 Study design

To test these hypotheses, a laboratory study with two experimental manipulations was set up. First, the participants' mood was altered through a validated guided visualisation method (DeMarco et al., 2015), where participants were instructed to first relax and then imagine a scenario (the death of their father, waking up blind, or grocery shopping in a supermarket) as vividly as possible in front of their mind's eye. Second, the participants listened to either comforting or distracting pieces from their personal music library over studio-quality headphones for 20 minutes. Hence, the experimentation employed a 3 (*sadness induction: interpersonal sadness, non-interpersonal sadness, neutral*) \times 2 (*listening strategy: comfort vs. distraction*) design. The 90 participants were randomly assigned to one of the six conditions and tested separately.

The social aspect of the private listening experience was captured by standardised loneliness and belonging questionnaires (see next chapter) that were administered directly before and after the listening phase. Additionally, the participants' mood was assessed with a modified version of the Brief Mood Introspection Scale (Mayer & Gaschke, 1988; see next chapter) upon arrival in the laboratory, after the emotion induction procedure, and again after the listening phase. Demographic variables and personal dispositions were separately assessed online with established questionnaires (see chapter 3.2.4.3) in order to statistically control for interpersonal differences that may affect the temporary experience of loneliness or empathy. In order to identify group differences, mixed-model ANCOVAs were performed on the data of the questionnaires and evaluation of the self-selected music.

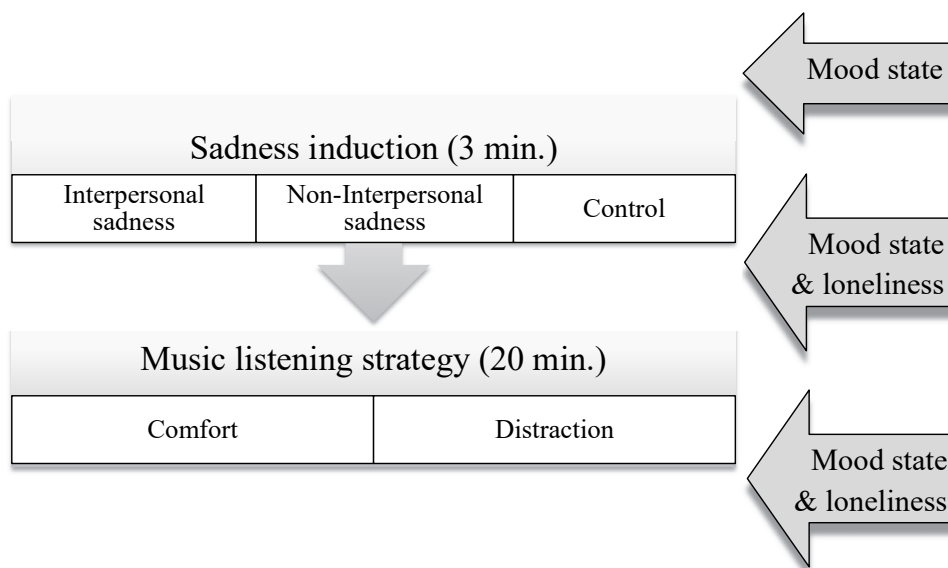


FIGURE 1 Flowchart of the experimental design

3.2.3.2 State measures

The following questionnaires were employed to monitor changes in momentary loneliness, belonging, and mood. First, state loneliness was assessed with the UCLA Loneliness Scale (Russell, 1996) which is conceptualised as unidimensional but mostly captures social loneliness (Cramer & Barry, 1999; see also chapter 2.3). The scale consists of 20 items that were rated from 1 (*not at all true*) to 5 (*extremely true*). The ULS was chosen over other loneliness measures because it is the most commonly used scale (Cramer & Barry, 1999; DiTommaso et al., 2004). Second, the reversely directed related concept of belonging was assessed with the State Belongingness Scale (Ong, IJzerman, & Leung, 2015). The ten items (e.g., “Right now, I feel like I fit in.”) were rated on the same 5-point Likert scale.

Third, participants’ mood state was assessed with a modified version of the Brief Mood Introspection Scale (BMIS; Mayer & Gaschke, 1988) which consisted of 16 adjectives that were evaluated on a scale from 1 (*definitely do not feel*) to 5 (*definitely feel*) and combined into subscales for sadness, happiness, anxiousness, and empathy. The participants’ mood was tracked to verify that the sadness induction was successful and to study the music’s mood-altering influence. The BMIS was selected over other similar instruments since it captures sad mood more precisely than other questionnaires that assess positive and negative affect (e.g., Positive and Negative Affect Schedule; Krohne, Egloff, Kohlmann, & Tausch, 1993). The short version was chosen because it is more efficient than the 62-item original Mood-State Introspection scale (Mayer, Mamborg, & Volanth, 1988).

3.2.3.3 Trait measures

Participants’ personal disposition to experience loneliness was measured as it can influence momentary feelings of loneliness and may motivate media consumption (Long, Seburn, Averill, & More, 2003). Trait loneliness was measured with the short version of the Social and Emotional Loneliness Scale (DiTommaso,

Brannen, & Best, 2004) whose 15 statements were evaluated on a scale from 1 (*Disagree strongly*) to 5 (*Agree strongly*). This multidimensional instrument was preferred over other similar measures because of its high reliability and its three relatively independent factors (Cramer & Barry, 1999). The short version was preferred since it is more efficient than the 37-item original scale.

Further, empathic capacities were assessed with the Interpersonal Reactivity Index (IRI; Davis, 1983) to statistically control for pre-existing interpersonal differences. In addition, empathy - in particular the *fantasy* subscale - is linked to the liking of sad-sounding music (Eerola, Vuoskoski, & Kautiainen, 2016; Vuoskoski et al., 2012) and mood-congruent music choices are associated with empathy, especially the subscales *fantasy* and *personal distress* (Davis, 1983). Respondents evaluated the 28 items on a scale from 1 (*Does not describe me well*) to 5 (*Describes me very well*). The IRI was chosen over other empathy measures, because it is commonly used in and well-proven for music research (Eerola et al., 2016; Vuoskoski, 2012).

3.2.4 Results

The statistical analyses revealed a significant reduction of loneliness and a relevant rise in the listener's empathy and mood after the private engagement with self-selected music irrespective of the previously induced mood (interpersonally sad, non-interpersonally sad, or neutral) or the applied listening strategy (comfort or distraction). Thus, the main hypothesis needs to be discarded. However, listening to music affected feelings of loneliness and empathy in the predicted way: participants reported to feel less lonely and more empathic after engaging with either comforting or distracting musical pieces than before. Additionally, both listening strategies seemed to provide a sense of company (see *Figure 1*) and mood-correction comparably well, yet the listeners appeared to be happier and more relaxed after listening to self-selected music. In sum, the current findings suggest that private engagement with familiar music can brighten the mood and provide a sense of company irrespective of the listener's mood or the involvement of comfort or distraction as affect regulation mechanism.

Since empathy is an inherently social emotion and private music listening amplified empathic feelings, this result supports the notion that even solitary music listening engenders social cognitive processes (Aucouturier & Canonne, 2017; Wallmark et al., 2018). Thus, we suggest that social cognition can be triggered by different types of familiar music which substantiates the conception of music as a social surrogate (Elvers, 2016) and is in line with the notion of music acting as a virtual friend (Sloboda, 1992; Van den Tol & Edwards, 2014).

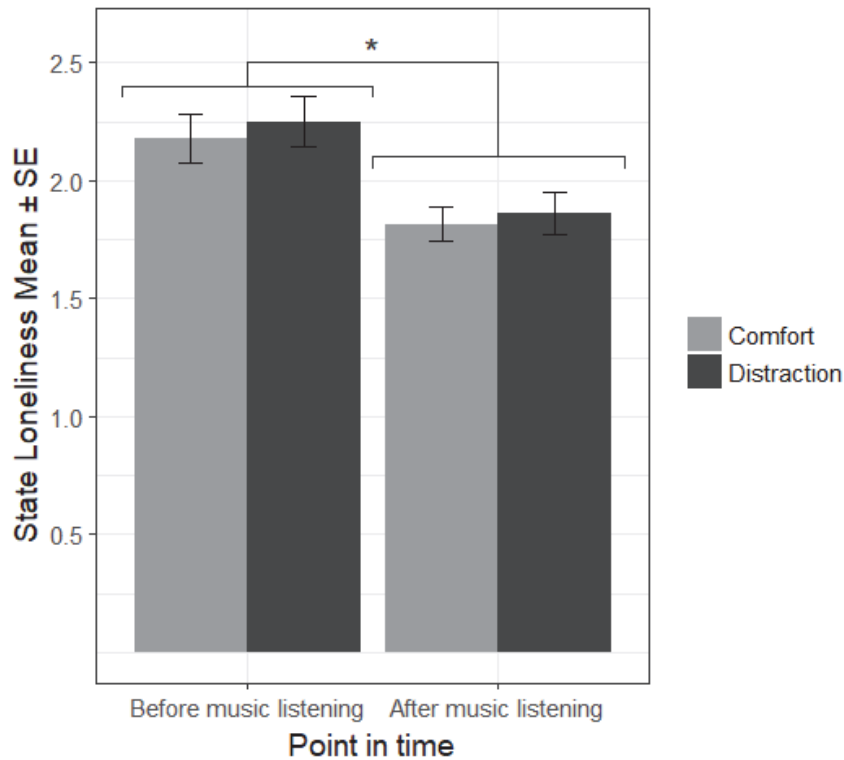


FIGURE 2 State loneliness per listening strategy (comfort, distraction) before and after the music listening; *Note.* * $p \leq 0.05$.

The discrepant findings might be at least partly explained by methodological differences; the participants' answer choices in Lee et al.'s (2013) studies were very limited. Under more naturalistic conditions, the proposed preference for mood-congruent music after interpersonal loss experiences is not observable anymore (DeMarco et al., 2015) and the mood-congruency hypothesis does not seem to hold true. The results presented in article II rather suggest that mood-incongruent music can also act as a social surrogate and that music listening can provide mood-correction and a sense of company in both interpersonally and non-interpersonally sad and neutral situations.

Despite these findings, sad music might still offer other benefits over distracting pieces in interpersonally sad situations and it might be perceived as a surrogate for an empathic friend for reasons other than those that were studied in the current experiment. It is for instance conceivable that melancholic music might validate emotions, offer understanding, and provide acceptance after painful social experiences in similar ways to an empathic friend (Hill, 1991). The specific characteristics of the music that enable those psychological processes remain to be clarified in future research.

3.3 Study III: An online survey

The third study in this dissertation was carried out as a survey which is especially suitable for the collection of data about demographic information (e.g., education), attitudes (e.g., motivations), and behaviour (e.g., instrumental practice; Balnaves & Caputi, 2001). Surveys are often implemented in the form of questionnaires whose online distribution has many advantages. First, one can easily reach a large number of potential respondents (Van Selm & Jankowski, 2006) from a broader pool of participants which may increase the generalisability of the results (Reips, 2000). Second, online surveys present a time- and cost-efficient manner of collecting data since the distribution of the questions and entry of the answers into a database are much faster and cheaper (Van Selm & Jankowski, 2006). Third, the available survey software allows strong methodological control in terms of required completion of answers, forced succession of questions, or randomisation of the order of answer options that may reduce possible response biases (Evans & Mathur, 2005). Naturally, online questionnaires have potential weaknesses, too. Yet, unclear instructions, for instance, are avoidable through a pre-test and the response rate that is often lower compared to telephone or mail surveys can easily be heightened by incentives such as vouchers (Evans & Mathur, 2005).

Since the current study aimed to investigate a new area of social surrogacy, we chose an exploratory analysis approach. Hence, the collected data were subjected to exploratory factor analyses (EFAs) whose purpose is to detect empirical regularities (Haig, 2014a). Based on the identified patterns in the data, elementary explanatory theories about the common causes of correlated variables can be generated (Haig, 2014b). In other words, the EFA is a reductive, data-oriented statistical approach that reveals correlational structures of the variables, i.e. factors, whose interpretation is an important first step towards elementary theory generation.

3.3.1 Aim

The literature about symbolic social interaction with various types of media suggests different mental operations which supposedly serve audience members in feeling connected with absent relationship partners or characters in narratives or television programs (Gabriel et al., 2016; Gardner, Pickett, & Knowles, 2005). Previous research suggests that music has the potential to engage several of those mental mechanisms (see chapter 2.6). Hence, the objective of the current survey study was to explore which of those psychological processes private music listening can enable and if it can provide comparable benefits as can the engagement with other social surrogates. In order to clarify this issue, music listening was compared with the domains of literary fiction and television where beneficial effects of symbolic social relationships on the sense of belonging had already been demonstrated (Derrick et al., 2009; Gabriel & Young, 2011). Accordingly, the guiding question for this investigation was the following:

Through which psychological processes could private music listening provide a sense of connectedness?

3.3.2 Method

To get an overview of the phenomenon, an exploratory survey consisting of two parts was compiled. The first part of the survey addressed media-related mental operations that supposedly provide connectedness and the second part addressed personal dispositions such as the need to belong. First, three surrogacy mechanisms were identified through an extensive thematic analysis of the literature about symbolic social interaction with literary fiction and television programmes respectively: i) group affiliation through identification with a real or fictional character, ii) parasocial relationships with media personae, and iii) a representation of a real relationship partner (for an overview, see Gardner, Pickett, & Knowles, 2005). Based on these categories, several face-valid items for each potential mechanism were compiled and supported by statements about media-related belonging from a recent study of functional uses of music listening (Schäfer et al., 2013). Further, as the opposite of social surrogacy, a few items about isolation through engagement with media were added. In total, 30 items were composed that represented different aspects of social connectedness through media. The wording of these items was adjusted to the domains of music, television and films, and literary fiction, resulting in three comparable questionnaires and 87 items in total. These three questionnaires comprised the first part of an online survey in which 367 relatively highly educated participants with a mean age of 28.2 years ($SD = 7.9$) rated their agreement with these items on a scale from 1 (*I strongly disagree*) to 5 (*I strongly agree*). In the present sample, the securely attached were underrepresented while the anxiously attached are overrepresented compared to a representative sample (Mickelson, Kessler, & Shaver, 1997). The sample consisted of about 50% musicians and 50% non-musicians.

In the second part of the survey, personal dispositions linked to (symbolic) social interaction - such as attachment style (Cole & Leets, 1999) or the need to belong - were assessed with standardised presently described questionnaires along with total media consumption and the participants' demographics in order to characterise the sample and to explore potential connections of these elements with their employment of social surrogates.

The Attachment Scale (Bartholomew & Horowitz, 1991) is a forced-choice instrument in which respondents select their predominant way to relate to others among four styles of attachment (secure, dismissing, preoccupied, and fearful) based on brief descriptions. Secure attachment would for example be described as follows: "It is easy for me to become emotionally close to others. I am comfortable depending on them and having them depend on me. I don't worry about being alone or having others not accept me." The Attachment Scale was selected over other attachment measures because of its efficiency.

The Need to Belong Scale (Leary, Kelly, Cottrell, & Schreindorfer, 2013) measures respondents' desire to be accepted by other people, seek opportunities to belong to social groups, and negative reactions to rejection or ostracism. Respondents evaluated how characteristic each of ten items (e.g., "I need to feel that there are people I can turn to in times of need.") were for them on a scale from 1 (*not at all*) to 5 (*extremely*). The need to belong was measured since people with a

higher need to belong develop stronger parasocial relationships with media figures (Gardner, Pickett, & Knowles, 2005; Greenwood & Long, 2009).

To estimate the role of media in the informants' lives, they were asked how many hours per week they watched television or films, read fiction, and listened to music respectively. According to the answers, the sample was divided into low and high consumers by median split. The demographic questions addressed the informants' level of general and musical education, current occupation, nationality, and country of residence.

3.3.3 Results

The items of each media domain were analysed separately with EFAs. After determining the optimal number of factors to extract through parallel analysis (Zwick & Velicer, 1986), six factors that explained 50 to 60% of variance in the data were extracted in both domains, literature and television/films. In the musical domain, the analysis revealed seven factors that explained about 50% of the variance. The extracted factors for music listening were named *Company*, *Reminiscence*, *Shared experiences*, *Understanding others*, *Isolation*, *Group identity*, and *Culture*. A closer look at the factor structure and mean ratings revealed overlaps and differences in the content and importance of the different social aspects of media engagement between the three domains (see Table 2).

One of the most important social aspect of engaging with media of any domain was seeking company and comfort (*Company*) which suggests that music is used as a temporary substitute for social interaction alongside other media. Another key facet of social surrogacy in all three domains was the connection through identification with a musician or character and feelings of belonging induced by shared feelings or experiences (*Shared experiences*). This finding may point towards the role of shared experiences in empathic identification (see chapter 2.4.1). As this facet also highlights the role of lyrics or a plot, it can be seen as a hint towards the possible role of lyrics as a sort of narrative through which listeners identify with the artist.

TABLE 2 Mean ratings (and SD = standard deviation) of all factors of all three media domains

| Factor name | Music | Television/ Films | Literary Fiction |
|---------------------------|-------------|----------------------|---------------------|
| 1 Company | 3.62 (0.37) | 3.26 (0.16) | 3.09 (0.31) |
| 2 Reminiscence | 3.30 (0.45) | 2.21 (0.39) | 2.30 (0.29) |
| 3 Shared experiences* | 3.11 (0.34) | 2.92 (0.35) | 3.18 (0.58) |
| 4 Isolation** | 2.96 (0.35) | 2.40 (0.28) | 3.09 (0.31) |
| 5 Understanding others*** | 2.66 (0.21) | 2.92 (0.35) | 3.38 (0.33) |
| 6 Culture | 2.41 (0.24) | 2.22 (0.08) | 2.48 (0.16) |
| 7 Group identity | 2.27 (0.40) | 2.27 (0.36) | 2.34 (0.32) |

* contains *Understanding* in television/films and *Identification* in Reading Fiction

** contains *Company* in Literary fiction

*** contains *Feeling understood* in television/films

Besides these commonalities across all media, the importance of certain other facets (e.g., *Reminiscence*) was more heterogeneously spread across the three types of media. For example, whilst gaining insights into the thoughts and behaviours of others (*Understanding others*) was one of the most crucial social aspects for reading fiction and watching television, it was not the case for music listening. However, being reminded of certain people or periods of one's life (*Reminiscence*) was an essential facet of social connection through music listening, but not for watching television or reading fiction. Further, being shielded from one's surroundings through engagement with media (*Isolation*) was deemed more important in the musical and literary domains than in watching television. In this study, neither belonging to a group of fans (*Group identity*) nor connecting with one's culture (*Culture*) seemed to be as important as other social aspects for media engagement.

Additionally, some of the facets' content varied significantly. One of the main differences was found in the literary domain in which items describing physical isolation correlated with those representing company. This finding suggests that fictional narratives offer readers the opportunity to connect with the characters of the story while disengaging from the actual environment a process also called transportation which is known to facilitate identification with fictional characters (Green & Brock, 2000).

As possible mental mechanisms through which music might be able to temporarily provide a sense of belonging, the current results indicate i) the elicitation of nostalgic feelings through musically supported reminiscence, and ii) identification with a musician, which might be facilitated by lyrics that resonate with the listeners' feelings or experiences. In line with previous findings (Gabriel & Young, 2011), affiliation to a symbolic group through identification was discovered as a potential surrogacy mechanism in the literary domain. For watching television, the importance of shared emotions and experiences, as well as identification with others, align well with the friend-like characteristics of parasocial relationships (Kanazawa, 2002).

Regarding individual differences, a greater need to belong was associated with higher factor scores in all domains which corroborates the relation of the extracted factors to social needs. While the amount of media consumption correlated positively with most of the factors for television and literary fiction, gender had the biggest influence in the musical domain for which women yielded higher scores. The gender effect might partly stem from the greater desire for social affiliation expressed by women in our sample.

To summarise, private music listening seems to function as symbolic social behaviour in ways similar to watching television or reading fiction. However, the ways through which media may affect one's sense of belonging may differ between domains. Music, for instance, seems to be particularly powerful in evoking nostalgic memories. Hence, when one wants to connect with a specific person through memories, they might rather listen to a song reminiscent of that person instead of turning towards television or books that might be favoured when connection with the characters of a specific story world is desired.

4 DISCUSSION

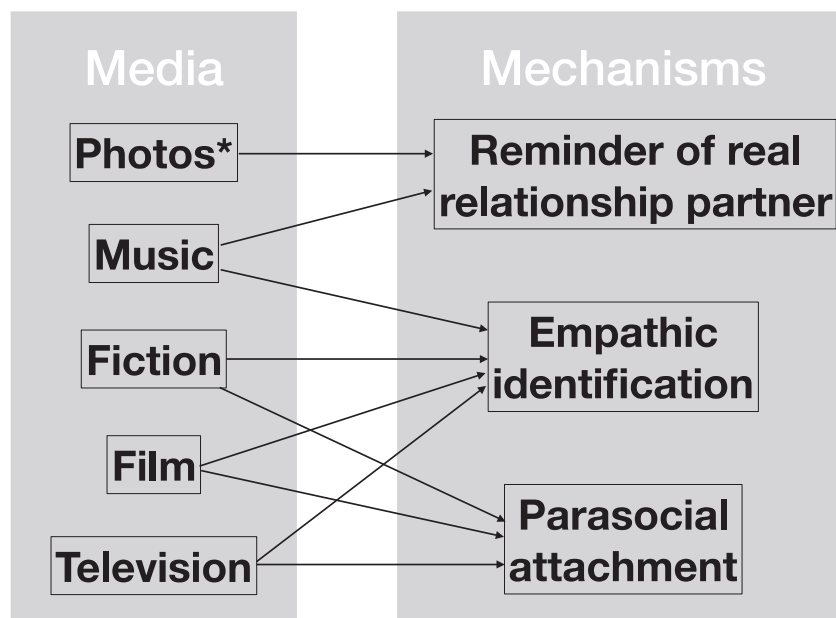
4.1 Summary of the findings

As a whole, this thesis provided new insights into the social functionality of private music listening. Study I elaborated the hypothesis that engaging with melancholic music after experiencing a social loss provides a sense of empathic company and situated this theory of social surrogacy through melancholic music among previous accounts describing the enjoyment of music-related sadness. Study II suggested that even the solitary engagement with familiar consoling and distracting music can convey a sense of belonging. Finally, study III elaborated on the psychological mechanisms that may account for the bolstered social connectedness one may experience through engagement with music and other media.

The results of the empirical work presented here put forward that not only comforting melodies can reduce feelings of loneliness, but that solitary engagement with familiar music in general is likely to afford listeners a sense of belonging. Further, music appears to be actively utilised as an aesthetic surrogate for social interaction alongside other media such as television or fictional literature and it seems to provide connectedness through similar mechanisms like other social surrogates (see Figure 3), namely nostalgic reminiscence and empathic identification. The former describes how music may offer intimacy by reminding listeners of significant past relationships or events. Hence, music listening represents an effective way of connecting to one's personal history. Empathic identification can be described briefly as the merging of the self with a fictional or real media persona. In the following sections, the results will be discussed in more detail in thematic order beginning with evidence of music as a social surrogate, then in the context of specific surrogacy mechanisms. Furthermore, the role of empathy, being moved, and mental simulation in engagement with music and other media will be addressed before approaching symbolic social behaviour from an evolutionary perspective and finally, elucidating the effects of engaging with different kinds of media on human health and well-being.

4.2 Music provides company

Many people habitually turn on the radio or television to have some ambient background sound when they are alone. The results of the work presented here suggest that most of the entertainment media not only provide background noise but also a sense of company (studies II and III). Companionship was identified as an important motive for engaging with television programmes as well as literary fiction, films, and music, which suggests that musical pieces are utilised as aesthetic surrogates for social interaction alongside other media (study III). Additionally, even solitary engagement with familiar melodies seemed to provide a sense of companionship (study II) which further supports the social function of music listening. Both of these results from this dissertation are in line with the common use of music as a means of having company and subsequently as a remedy for loneliness (Derrick et al., 2009; Groarke & Hogan, 2018; Juslin, Laukka, Liljeström, Västfjäll, & Lundqvist, 2011; Juslin et al., 2008; Lippman & Greenwood, 2012; Mitchell et al., 2007; Saarikallio et al., 2018). Moreover, these findings are in consonance with the attribution of person-like qualities to music (Watt & Ash, 1998) and the perception of familiar melodies as virtual friends (Lippman & Greenwood, 2012; Sloboda, 1992; Van den Tol & Edwards, 2014). Hence, in accordance with previous research, recent results propose that music effectively provides listeners with a sense of company. The next section illustrates how music and other media might afford this social surrogacy.



* includes other (symbolic) representations of real relationship partners

FIGURE 3 Overview of the mental mechanisms that afford a connection while engaging with different media

4.3 Psychological connection mechanisms

4.3.1 Reminiscence and nostalgia

The evaluation of the online survey brought up reminiscence as an important social aspect for listening to music. This facet described media as reminders of specific people or life events that audience members associate with a particular media experience (Garrido & Davidson, 2019) and is in line with the finding that many listeners actively utilize music to remind themselves of meaningful past events (Juslin & Västfjäll, 2008). Since reminiscence was deemed more important for the engagement with music than with films, television programmes, or literary fiction, it seems to be a specific feature of music to reconnect listeners with events and people from their past which corroborates that music is one of the most powerful triggers of nostalgia (Barrett et al., 2010; Juslin et al., 2008; Zentner, Grandjean, & Scherer, 2008).

Moreover, this retrospective aspect of social surrogacy shares some characteristics with musically triggered episodic memory processes that induce emotions through memories of particular events in the listener's life (Juslin & Västfjäll, 2008). A popular example of this effect is the "Darling, they are playing our tune" phenomenon (Davies, 1978). With its clear reference to the past, this memory-evoking faculty of familiar melodies is similar to social surrogacy through symbolic reminders of real relationship partners (see chapter 2.4.3; Gardner et al., 2005). Hence, I suggest that music be included as a social surrogate alongside other representations of real social bonds such as personal gifts, children's drawings, or photos of loved ones.

When music triggers personal memories it often conjures up bittersweet nostalgic feelings at the same time (Barrett et al., 2010; Janata et al., 2007; Juslin & Västfjäll, 2008) which can be characterised as a mix of wistful joy and sadness (Barrett et al., 2010) or happiness with a tinge of loss and longing (Zhou, Wildschut, Sedikides, Chen, & Vingerhoets, 2012). Nostalgic narratives often involve interactions with significant others which highlights the importance of the social element. Additionally, nostalgic individuals typically remember a fond, personally meaningful memory such as a close relationship (Zhou, Wildschut, Sedikides, Chen, & Vingerhoets, 2012) which underlines its resemblance to reminiscence.

Nostalgia and reminiscence seem to operate as very similar mechanisms; while reminiscence is supposed to convey a sense of belonging by bringing to life significant others from one's past (DeNora, 1999; Wildschut, Sedikides, Arndt, & Routledge, 2006), nostalgia has been proposed to strengthen social bonds by rendering knowledge about positive social relations accessible (Baldwin et al., 1993; Wildschut et al., 2006). Furthermore, nostalgic reverie has been shown to augment the subjective perception of social support (Zhou, Sedikides, Wildschut, & Gao, 2008) and increase an individual's perceived capacity to provide emotional support to others (Wildschut, Sedikides, Routledge, Arndt, & Cordaro, 2010). Moreover, music-evoked nostalgia increases bodily warmth by fostering feelings

of interpersonal affiliation (Zhou, Wildschut, Sedikides, Chen, & Vingerhoets, 2012) that are strongly associated with the physical sensation of warmth (IJzerman & Semin, 2009; Williams & Bargh, 2008). To summarise, nostalgic feelings act as a remedy for sadness and loneliness (Wildschut et al., 2006, 2010; Zhou et al., 2008) which makes it a highly probable ingredient of social surrogacy through music (see also Eerola, Vuoskoski, Peltola, Putkinen, & Schäfer, 2018; Garrido & Davidson, 2019). Thus, I suggest that musically supported reminiscence not only revives mental representations of important others from the listener's past, but it also evokes nostalgic feelings that emotionally restores social connectedness and even the physical sensation of human warmth. In other words, when music triggers personal memories including significant others, it serves human social needs on the mental, emotional, and physiological level.

4.3.2 Empathic identification

Another central aspect of social connectedness through media engagement is the affiliation with others through identification with a real or fictional character (see section 2.4.2). Statements describing empathic identification had been included in the online survey study (section 3.3), because it was known to provide a sense of belonging to readers of fiction (Gabriel & Young, 2011) and plays a role in viewers' engagement with television programmes (Cohen, 2006). The results presented in this dissertation confirmed how the readers' identification with fictional characters enables their affiliation with the inhabitants of story worlds. Moreover, the findings support the proposal that film and television viewers likewise empathically identify with protagonists (Giles, 2002; Greenwood & Long, 2009). Finally, the analysis of the survey revealed that identification-based connection also plays a role in the solitary engagement with music. This result supports the proposal that listeners might empathise with a performer's presumed emotional experience (Scherer & Zentner, 2001) or identify with the musical persona more generally (Elvers, 2016).

In the results of the online survey, identification formed one facet of social surrogacy with the phenomenon of gaining a sense of shared feelings or experiences during media engagement. This combination suggests that audience members identify with a media persona more easily if it expresses familiar feelings or experiences, which is suggestive of similarity-based identification (see section 2.4.1). According to the online survey, the plot of a novel or film is vital for the identification with story characters. Similarly, song lyrics were deemed important for the identification with a musical persona. Hence, I put forward that empathic identification with a musician might be supported by resonating lyrics (Lippman & Greenwood, 2012). The tight link between lyrics and identification is supported, for instance, by the finding that both are associated with the same regulatory strategy, *cognitive work* (Baltazar & Saarikallio, 2017), as with athletes empathising with performers of songs whose lyrics express confidence or other performance-enhancing states (Bishop, Karageorghis, & Loizou, 2007).

To summarise, the results suggest that listeners connect to musicians in a similar way as readers to characters or viewers to protagonists: through identification. Our data provide hints that this empathic process is based on similarities between the individual and the thoughts and experiences expressed by the music or narrative.

4.4 The role of empathy and being moved in music listening

Empathy is involved in different processes described in this dissertation. First, it is at the core of media-based identification processes described above. Second, it plays a role at several stages during music listening on a more general level, and third, it has been associated with the enjoyment of art-elicited sadness and the social emotion of being moved. The roles of empathy for the different processes operating during musical and other media experiences are now discussed in that order.

Gaining a sense of connection through the identification with a musical agent, a narrative character, or a media persona is supposedly based upon the audience member's empathic abilities (Oatley & Gholamain, 1997) that consist of cognitive and emotional social faculties. The emotional aspect consists of the capacity to feel for another person, in fiction or reality, while the cognitive component refers to the ability to adopt another person's perspective and understand other people's experiences (Cuff, Brown, Taylor, & Howat, 2016). Both of those aspects are assumed to play a role when audience members identify with a mediated person: they see the world through the other person's eyes (Green et al., 2004) and feel for him or her which is assumed to create a sense of intimacy (Mar & Oatley, 2008). Engaging with media might in turn provide knowledge about how the social world works. While it has been already shown that reading fiction enhances empathic abilities such as theory of mind (Mar et al., 2006), the proposal that 'mellow' music (i.e., music featuring reflective, thoughtful, emotional, romantic, and gentle attributes) may promote empathizing by improving the listeners' understanding and reactions to thoughts and feelings of both the self and others (Greenberg et al., 2015) is not yet empirically supported.

While empathic identification is based on the deliberate engagement of audience members with an imaginary agent, empathic processes are also thought to operate automatically during music listening, for instance, during emotional contagion (e.g., Juslin & Västfjäll, 2008b; Scherer & Zentner, 2001) or internal simulation of the emotionally expressive characteristics of the music (e.g. Davies, 1994; Molnar-Szakacs & Overy, 2006). In other words, empathic abilities not only influence how readily listeners engage in identification while interacting with media but they also impact how much listeners get engrossed by the emotional expression of the music and to what extent they can simulate emotionally expressive musical behaviour. Taken together, music listening can trigger empathic processes on different levels; this is further supported by a finding in the listening experiment (study II) that consists of a significant increase in transitory empathic

feelings through listening to self-selected comforting or distracting music. As empathy is an inherently social quality (Davis, 2018), this result also supports the proposal that even private music listening can trigger social cognition (see section 2.5.2).

Regarding the paradox of ‘pleasurable sadness’, dispositional empathy is associated with greater enjoyment of tragic film excerpts (Hanich et al., 2014; Wassiliwizky, Wagner, Jacobsen, & Menninghaus, 2015) and sadness-inducing music (study I; Eerola, Vuoskoski, & Kautiainen, 2016; Garrido & Schubert, 2011; Vuoskoski & Eerola, 2012). At the same time, trait empathy correlated positively with the intensity of music-induced feelings of sadness and movingness (Vuoskoski & Eerola, 2017). So, the more empathic listeners reported a stronger liking of sadness-inducing musical pieces and more intense feelings of sadness and being moved or touched (terms are used interchangeably) at the same time. Subjecting those correlations to a moderation analysis revealed that the puzzling positive correlation between felt sadness and the enjoyment of melancholic music or sad films was almost fully moderated by feelings of being moved (Hanich et al., 2014; Vuoskoski & Eerola, 2017). In other words, music-induced sadness contributes to liking by intensifying feelings of being moved.

Being touched seems to integrate nominally negative emotions into an overall enjoyable emotional episode (Wassiliwizky et al., 2015) and is therefore essential for taking pleasure in saddening aesthetic experiences (Menninghaus et al., 2015). Feelings of being touched are typically aroused by significant relationship events such as marriage, separation, and reunion but also by exposure to artworks, nature, and music (Konečni, 2005; Menninghaus et al., 2015). Subsequently, those feelings activate the value of social connections and prosocial behaviour such as helping or bonding (Menninghaus et al., 2015; Zickfeld et al., 2017) which is corroborated by the finding that moving film scenarios often represent social norms and self-ideals (Menninghaus et al., 2015a). Thus, being moved is a socially significant emotion (Menninghaus et al., 2015; Vuoskoski & Eerola, 2017; Zickfeld et al., 2017). Further, the activation of social norms and connectedness through art-induced movingness corroborates Tan’s (2009) proposal that being touched might have a powerful impact on interpersonal affiliation and it further supports Panksepp’s (1995) hypothesis that deeply moving melancholic music activates social emotions and interpersonal attachment. That effect is also in agreement with the suggestion that listeners might find sad musical pieces that are perceived as expressing pro-social intentions as particularly moving (Vuoskoski & Eerola, 2017). Hence, several theoretical accounts independently proposed that being moved supports social bonding. Taken together with the result that sad songs tend to intensify feelings of being touched, it is conceivable that listening to moving melancholic music affects people’s sense of belonging by activating social emotions and highlighting the value of interpersonal connectedness. However, the exact relationship of media-induced movingness and social surrogacy remains to be clarified by future research.

4.5 Mental simulation and art experiences

Underlying all of the operations described in this chapter is an even more fundamental psychological process: mental simulation. The ability to simulate is essential for the experience of emotions, the ability to empathise with a real or fictional person, the immersion into fictional worlds, and for the understanding of emotions in music that are presently discussed.

First, mental simulation is the central process for the constructionist view of emotions (Barrett, Wilson-Mendenhall, & Barsalou, 2015) that the authors adopt in study I. This approach holds that the brain anticipates the course of events based on past experiences and compares this simulation with the incoming sensory information from the body and the environment to attribute meaning to both the internal and external perceptions (Barrett, 2017). In other words, emotions are the brain's simulation of what bodily sensations mean in consideration of situational variables (Barrett, 2012). If we notice, for instance, that our shoulders are tensed, we may perceive this sensation as feeling afraid if we watch a scary film or as joyful anticipation as a positive event is unfolding. Additionally, cultural scripts and contexts influence what kind of emotions are experienced and in which way (Mesquita & Ellsworth, 2001; Miyamoto & Ma, 2011). In other words, the constructionist account claims that emotional experiences are shaped by the social and cultural reality in which people live.

Second, simulation is the basis for the capacity to be empathic which is involved in music perception in several ways. Examples include increasing the enjoyment of sad music through intensification of feelings of being moved (study I), or enabling automatic and deliberate processes such as emotional contagion (Juslin & Västfjäll, 2008b), the simulation of expressive musical behaviour (Molnar-Szakacs & Overy, 2006), or identification with a musical agent (Oatley & Gholamain, 1997). Damasio and Damasio (2006) have proposed that a specialised part of the brain which monitors the status of the rest of the body can also simulate bodily states in the absence of actual physiological changes in the body. This simulation mechanism is presumably involved in the mirroring of other people's behaviour, enabling individuals to understand how others think and feel (Damasio & Damasio, 2006). In order to empathise with other people, individuals are thought to automatically simulate the physiological changes or expressive behaviour involved in the other's emotional state in their own brain (mentally recreating another's bodily changes). This mental simulation is assumed to be sufficient to arouse the feeling of those changes that are then perceived as belonging to the other person (projective perception; Cochrane, 2010). In other words, we understand the intentions and feelings of other people through internal mimicry of their perceivable bodily changes to which we ascribe meaning in consideration of contextual information. This kind of simulation seems to operate not only during interaction in real life, but also while engaging with fictional worlds.

Third, the importance of simulation processes for the engagement with music and other media is highlighted by two theories which both put forward that fictional events operate the same biological and cognitive machinery as non-fictional events: the simulation theory of musical expressivity (Cochrane, 2010) and a fiction-based simulation theory (Mar & Oatley, 2008). Mar and Oatley (2008) claim that literary narratives offer simulations of the social world and that the simulative experience while engaging with fiction can foster the reader's capacity for empathy. Since fiction is supposed to operate the same empathic processes like experiences in real life, feeling for a fictional character presumably creates a similar sense of intimacy like empathising with a real person (Mar & Oatley, 2008). Hence, this theoretical account suggests that identification with a virtual character can prompt feelings of closeness because it operates neuronal simulation processes that are vital for empathising with actual people.

A similar reasoning is at the heart of the simulation theory of musical expressivity (Cochrane, 2010) which posits that listeners understand the emotional expression of music in a similar way to how they recognise emotions in other people, through internal mimicry of expressive gestural cues. This neuronal simulation process is, according to Cochrane (2010), proposed to generate the feelings associated with the expressive behaviour, allowing listeners to perceive the emotional expression of the sounds. Since this neuronal simulation mechanism has evolved to one understanding actions and feelings of other people, it is plausible that the results of such processing give rise to one's impression of another person (Cochrane, 2010). In other words, music is assumed to convey a sense of agency by operating simulation mechanisms that serve the understanding of others' feelings and intentions. In sum, it has been proposed that we understand the intentions and feelings of other people through mental simulation of their expressive behaviour. This internal mimicry is apparently also involved in symbolic social interaction with virtual characters or musicians and is assumed to account for the perceived sense of presence while engaging with media.

4.6 Evolutionary perspective on symbolic social behaviour

The simulation theory of musical expressivity (Cochrane, 2010) holds that music's ability to trigger internal mimicry of expressive musical gestures is based on either active imagination of the action involved in the sound generation (see section 2.5.2) or the implicit belief that music is a product of human agency. The latter is especially plausible from an evolutionary point of view since musical sounds were always produced live by (other) people before the advent of recording techniques. Therefore, music was a reliable indicator for the presence of conspecifics for most of human evolution which might account for the sense of presence of a musical persona that individuals still perceive today while listening to recorded music. This claim will be explicated further in the following section.

The key to the understanding of symbolic social behaviour lies in the evolution of our species. First, the human mind has evolved to react quickly to environmental stimuli since it was more important for survival to respond promptly to situations than with perfect accuracy (Mantovani, 1995). As a result, human beings automatically apply their knowledge about how the social world works to mediated or simulated actors which enables feelings of social presence (Lee, 2004). Second, most of our current physiological and mental properties evolved in prehistoric times (Lee, 2004) when it was adaptive, for instance, to prepare for a fight-or-flight response in the face of a stressor, such as a sabre-toothed tiger. Even though reacting with fight or flight is not adaptive anymore, the body still performs similar processes such as releasing stress hormones or inhibiting the immune system (Maté, 2011). Similarly, we automatically react socially when we perceive a cue of human presence such as music since it was adaptive to assume the presence of conspecifics when hearing a human voice or music in the primeval era (Kanazawa, 2002; Nass & Brave, 2005; Nass & Gong, 2000). Through virtually all of humanoid evolution, anything that acted socially was a real person and music could only be experienced in social contexts (Reeves & Nass, 1996). So, music was a reliable indicator of the presence of conspecifics before the development of sound recording technology. Hence, it seems likely that the human brain automatically responds socially to musical sounds irrespective of the form of presentation. In other words, recording techniques appeared too recent in evolution (Harari, 2015) for human brains to develop the ability to automatically discern media features that resemble human characteristics from actual human traits. This does not mean that individuals are unable to differentiate between the real and mediated worlds, but the distinction requires a mental effort (Reeves & Nass, 1996). Thus, when individuals engage with media without the explicit aim of differentiating reality and fiction, audiences are likely to perceive a sense of presence (Lee, 2004) which corroborates the claim that even solitary symbolic social interaction with music and other media can provide a sense of connection from an evolutionary point of view.

4.7 Symbolic social behaviour and well-being

At the beginning of this dissertation, the importance of social inclusion for health and well-being was explained (chapter 2.1). After that, it was elucidated, how symbolic social interaction can provide a sense of connection (chapter 2.4). The current research suggests that music is used as temporary substitute for social contact alongside other social surrogates. Consequently, the reader probably wonders how symbolic social interaction with music or other media affects people's well-being. Unfortunately, there is relatively few data about the social use of private music listening from which to draw conclusions. Prior research about emotion regulation through music suggests though that music can support both healthy and unhealthy strategies (Greenwood & Long, 2009; Saarikallio, Gold, & McFerran, 2015). Similarly, watching television can have both supportive and

harming effects on well-being (Greenwood & Long, 2009). Hence, the question about the health consequences of symbolic social behaviour cannot simply be answered with “good” or “bad”. In order to obtain a more differentiated view, current knowledge will be delineated in the following section. Due to the lack of literature on music- or fiction-related health effects, the summary is based on studies about the social use of television and internet-based social interaction. Yet, it might be possible to draw preliminary conclusions for the effects of music listening from the influence of other symbolic social activities on the audience’s well-being given that different media operate similar psychological connection mechanisms (chapter 4.3).

A topic that has gained lots of attention recently is social interaction through the internet (e.g., Caplan, 2003). The fast technical development of the internet allows people to be in touch with each other in completely new ways, e.g., through instant messengers (e.g., WhatsApp), social media (e.g., Facebook), or visual telephony (e.g., Skype). Research has shown that instant messaging can influence well-being positively, for example by enhancing the quality of existing friendships (Valkenburg & Peter, 2007). Similarly, social media presumably contribute to bonding by helping individuals to maintain existing relationships or make new acquaintances (Ellison, Steinfield, & Lampe, 2007). Thus, online social interaction seems to be beneficial for maintaining or intensifying existing close relationships or forming weak ties with new contacts, but the internet does not appear suitable for creating novel close emotional bonds (Ahn & Shin, 2013; Ellison et al., 2007). One of the reasons might be that online social interaction cannot (yet) replace important social functions of face-to-face communication such as providing emotional support through for example hugs or hand-holding (Ahn & Shin, 2013). As a consequence, internet-based social interaction seems to act rather as a supplement than a replacement of interaction in real life (e.g., Seidman, 2013), which resonates with the idea of symbolic social activities as temporary substitutes that help people to hang on until the next proper direct social interaction is possible (Gardner, Pickett, & Knowles, 2005). On that basis it seems likely that symbolic social interaction with media may be beneficial for people’s well-being when it is used as supplement for real-life contacts.

Furthermore, media research found evidence for positive effects, when the alternative realities of television programmes or films provide opportunities for role play and emotional processing that facilitates personal growth (Greenwood & Long, 2009). This finding might be transferable to other media that offer story worlds such as fiction. On the less beneficial side, audience members with a lack of social competences can be drawn into a vicious circle through media consumption. Socially isolated individuals may engage with television programmes, films, or the internet to gratify their need for a sense of belonging because these media can be easily accessed by those lacking social competence (Kim, LaRose, & Peng, 2009; Rubin, Perse, & Powell, 1985). Yet, the social use of television or computers most likely cannot completely gratify their social needs (Ahn & Shin, 2013), which may motivate the lonely to increase their media use and potentially aggravate their problems (Caplan, 2003). Hence, one can conclude that engagement

with media becomes problematic when it is used as permanent replacement for social interaction with real people.

In sum, the social use of media such as television, films, instant messengers, or social media seems to be beneficial for people's well-being if it intensifies existing relationships or if the virtual contact is used as a *temporary* substitute for real-life social interaction (complementary use). Since these premises resonate with the general conceptualisation of social surrogacy as an extension of direct social interaction, it seems reasonable to use those findings as a basis for predicting health effects of other symbolic social behaviours. Hence, I propose that music listening might be a suitable temporary substitute for social interaction in real life as long as it is not used as permanent replacement for direct social interaction. Nevertheless, this proposal - together with the health effects of other symbolic social activities - remains to be addressed by future research.

4.8 Limitations

This dissertation has certain limitations that need to be acknowledged. First, the research presented here is mostly based on self-reports (study II and III) whose explanatory power is limited by the introspective and reflective abilities of the participants (Västfjäll, 2010). Second, social motives can act outside of conscious awareness (Fitzsimons & Bargh, 2003; Gabriel et al., 2016; Reeves & Nass, 1996) which suggests that self-reports only capture a part of the phenomenon. Hence, the development of experimental paradigms that allow the assessment of automatic social processes without relying on self-reports would be desirable. Third, direct measuring techniques like the psychometric instruments used in study II are prone to the social desirability bias since both of these feelings are socially undesirable. Therefore, future research should advance indirect measurement techniques for socially undesirable states such as loneliness. Fourth, an experimental paradigm (study II) always restricts the generalisability of the results as only one variable may vary between conditions (see also chapter 3.2). Hence, despite the effort to maximise the ecological validity of study II by using self-selected instead of experimenter-selected musical pieces, it might be limited by the instructions to apply either a distracting or comforting musical emotion regulation strategy that might have interacted with the participants' personal tendency to regulate emotions. Fifth, the generalisability of the results from the survey (study III) is restricted by the recruitment of only one sample and the sampling method. Convenience samples, as the one recruited for study III, tend to have a higher education than the general population, come from a constrained pool of nationalities, and have an interest in the topic (Chandler & Shapiro, 2016). To validate the results obtained with the exploratory factor analysis (see chapter 3.3.3) it would be desirable to run a confirmatory factor analysis with data from a second, more representative sample. Sixth, most of the participants in study II and III were non-Native English speakers. Hence, even though people in the la-

laboratory had the opportunity to ask questions of the experimenter and participants in the online questionnaire had all kind of help available such as online dictionaries, it cannot be ruled out that some of the answers were based on an incomplete understanding of the material.

In addition, the integrative review methodology implies different restrictions to the generalisability of the results. A clear drawback of any review is the publication bias, since one can only review evidence that has been published. Further, the literature search can be biased, for instance, by the use of specific search terms in a limited number of languages. However, the influence of this bias might have been rather small since five experts with a high command of various languages and having different academic backgrounds were involved throughout the process. Finally, the analysis part of an integrated review process is not well defined (Whittemore & Knafl, 2005) which leaves room for personal biases in the analysis and interpretation stages. Yet, this room can be expected to be insignificant as the motivation for this investigation was to get a comprehensive overview of the theoretical accounts and their empirical underpinning.

Despite all the restrictions described above, the validity of the findings is strengthened through the use of complementary methodologies and the support from pertinent literature. Additionally, the multidisciplinary approach of this thesis grounds the obtained results in a broad theoretical framework and paves the way for a wide understanding of the phenomenon at hand.

4.9 Concluding remarks

The main contribution of the research presented in this synopsis is that music can be used as temporary substitute for interpersonal contact. Furthermore, music listening was found to be accompanied by mental social processes, even if people are just listening to a record by themselves; this should be taken into consideration in future music listening investigations. The research conducted in this project demonstrates how influential mental images can be on our psychological and physical well-being and what a powerful tool imagination is, whether we use it intentionally or let it act automatically.

To advance this line of research, paradigms and measures that can assess media-related automatic social processes more comprehensively should be developed and used to triangulate previous findings. Moreover, it is conceivable that, similarly to the Healthy-Unhealthy Music Scale (Saarikallio, Gold, & McFerran, 2015), a psychometric instrument could be developed that assesses media engagement as an indicator of deficits in social competences, of which people might not be aware and to which they may not readily admit. Thus, future studies should focus on the consequences of the social use of music and other media for health and well-being.

SUMMARY

As social creatures, human beings have a strong need to belong, feel accepted, and connected to other humans. When those social needs are not met, people suffer physiologically and psychologically. The impact of perceived social isolation (i.e., loneliness) on health is comparable to that of high blood pressure, obesity, or smoking. While social needs are ideally satisfied through frequent positive direct social interaction, humans are flexible enough that they can, at least temporarily, fulfill these needs even through indirect symbolic social interaction that occurs mainly in their minds. It has been shown that people can mentally connect, for instance, through identification with a real or fictional character while reading fiction, via one-sided, so-called parasocial relationships that individuals form with celebrities or other media personae through repeated mediated encounters, or with the help of (symbolic) reminders of existing social bonds such as photos of friends and family. Previous research highly suggests that music listening can initiate similar mental processes and that even solitary engagement with familiar musical pieces has the power to act as substitute for direct personal interaction, i.e. a social surrogate. Thus, the focus of this dissertation is on the social function of private music listening and it aims to elucidate if solitary musical engagement can afford individuals a sense of interpersonal connection.

Since recent studies assigned sad music a high potential to provide a sense of empathic company, the present investigation departs from the appeal of sad music. Hence, the first study is a review of the reasons for the enjoyment of music-evoked sadness. This study proposes an integrative framework for the existing findings with a biological, psychological, and cultural level of explanation and identified mental simulation as a key mechanism across research disciplines. The second study presents an experiment that was conducted to investigate if listening to comforting music can alleviate feelings of loneliness after experiencing a social loss. Since the analysis suggested that not only comforting but also distracting music seems to provide a sense of company, the different mental processes through which individuals might gain a sense of connection when privately engaging with music, reading fiction, or watching television were explored with an online survey in the third study.

The results indicate that music is actively utilised as a social surrogate and that not only comforting musical pieces can reduce feelings of loneliness. Music listening seems to provide connectedness through a similar mental process like the engagement with literary fiction or television programs, namely empathic identification. Audience members are presumed to identify with the performer who is perceived as living through an emotional experience. Our data suggest that this empathic process is facilitated by music and lyrics that resonate with the listeners' experiences. Furthermore, music seems to be especially powerful in evoking nostalgia that has been proven to effectively counteract loneliness. Thus, familiar pieces might not only evoke memories of close others, but also conjure up nostalgic feelings that emotionally restore the sense of connectedness.

Overall, the majority of mental processes that afford individuals a sense of connection during the solitary engagement with music seems to be based on empathy and mental simulation. It has been put forward that listeners automatically mentally simulate the expressive behaviour conveyed by music via the mirror neuron system (MNS). Since the MNS is active both during the execution and observation of movements in other humans and tightly linked to the limbic system, it allows people to understand the feelings and behaviour of others and has been proposed as neuronal basis for empathy. The activation of this mental simulation mechanism that originally evolved to understand actions and feelings of other humans might explain why listeners perceive a sense of presence during solitary engagement with music. Simulation and evolutionary theories are combined to explain the origin of symbolic social behaviour and this dissertation closes with the consideration of the impact of mediated social interaction on human well-being.

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ORIGINAL PAPERS

I

AN INTEGRATIVE REVIEW OF THE ENJOYMENT OF SADNESS ASSOCIATED WITH MUSIC

by

Tuomas Eerola, Jonna K. Vuoskoski, Henna-Riikka Peltola, Vesa Putkinen, &
Katharina Schäfer, 2018

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Review

An integrative review of the enjoyment of sadness associated with music

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Abstract

The recent surge of interest towards the paradoxical pleasure produced by sad music has generated a handful of theories and an array of empirical explorations on the topic. However, none of these have attempted to weigh the existing evidence in a systematic fashion. The present work puts forward an integrative framework laid out over three levels of explanation – biological, psychosocial, and cultural – to compare and integrate the existing findings in a meaningful way. First, we review the evidence pertinent to experiences of pleasure associated with sad music from the fields of neuroscience, psychophysiology, and endocrinology. Then, the psychological and interpersonal mechanisms underlying the recognition and induction of sadness in the context of music are combined with putative explanations ranging from social surrogacy and nostalgia to feelings of being moved. Finally, we address the cultural aspects of the paradox – the extent to which it is embedded in the Western notion of music as an aesthetic, contemplative object – by synthesising findings from history, ethnography, and empirical studies. Furthermore, we complement these explanations by considering the particularly significant meanings that sadness portrayed in art can evoke in some perceivers. Our central claim is that one cannot attribute the enjoyment of sadness fully to any one of these levels, but to a chain of functionalities afforded by each level. Each explanatory level has several putative explanations and its own shift towards positive valence, but none of them deliver the full transformation from a highly negative experience to a fully enjoyable experience alone. The current evidence within this framework ranges from weak to non-existent at the biological level, moderate at the psychological level, and suggestive at the cultural level. We propose a series of focussed topics for future investigation that would allow to deconstruct the drivers and constraints of the processes leading to pleasurable music-related sadness.

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1. Introduction

The paradoxical nature of enjoying nominally negative emotions such as sadness in the context of the arts and fiction has been widely acknowledged by philosophers from Aristotle to Schopenhauer. However, only the last decade has provided empirical evidence of this paradox in action in the domains of psychology [1,2] and neuroscience [3], and started to expose the ways in which people derive profound enjoyment from tragic films [4], literature [5], and sad music [6].

Central to this paradox are the functional aspects of emotions, such as sadness as an outcome of significant personal loss that results in behavioural withdrawal and anhedonia [7,8]. Fiction and music may be able to operate the very machinery responsible for real-life emotions such as sadness, but since it is detached from the actual consequences, the process can lead to a dramatically different outcome. Music that induces sadness but is nevertheless intensely enjoyed provides a striking example of this phenomenon. It is not just the fact that most cultures have a distinct category for sad music [9], and that listeners frequently report everyday experiences of sadness induced by sad music [10], but these experiences are commonly described to be highly enjoyable [11].

Despite the growing interest and empirical work, frameworks that would offer an explanation for this intricate paradox are still rare. Recently, Menninghaus and his colleagues [12] put forward a novel theory that purports to account for the appeal of negative emotions in all arts. However, their proposal mainly operates on the level of culture and generic psychological principles, and does not delineate the emotions themselves or the actual mechanisms involved. Our review takes a closer look at the appeal of negative emotions associated with music while simultaneously paying closer attention to the functions and mechanisms potentially involved in these paradoxical experiences. We also regard the enjoyment of music-induced sadness as a complex experience linked at biological, psycho-social, and cultural levels. This distinction into three levels bears resemblance to the three broad theoretical approaches to the psychology of emotion – evolutionary theories, cognitive appraisal theories, and social constructionist theories – which all provide different paradigms for research [13]. Each of these levels can be differentiated in terms of a number of key concepts such as the focus, hedonic shift, functions, and the type and quality of evidence, all of which we will consider in the following sections.

Before embarking further into the proposed explanations for pleasurable sadness induced by music, we will introduce five premises that are relevant for all explanations concerning music-induced emotions.

(i) Our philosophical stance to emotions is a nonessentialist perspective that questions the existence of fixed universal types of emotions, and considers emotions as complex, constructed experiences [14,15]. Moreover, we embrace an integrative approach to emotions, where we acknowledge the necessity of looking at the issue across multiple levels (biological, psychological, social, and cultural). This does not, however, mean that we have an instrumentalist account of emotions, where any theory could be right. Our stance could be labelled as scientific realism, where the explanations at different levels can be subjected to empirical evidence [16].

(ii) Emotions expressed by music may be different from the emotions the same music induces [17], our main focus of interest. For instance, sadness expressed by music is associated with a consistent set of affective cues [18], which may convey the emotion even across cultures [19] and to young children [20]. The actual experiences induced by music expressing sadness, however, may not always be aligned with the expressed emotional content [21]. These deviations are explained by distinct emotion induction mechanisms and construction of meaning, explained in the third premise.

(iii) There are multiple emotion induction mechanisms that music capitalises on [22]. Mechanisms such as *episodic memories*, *emotional contagion*, and *evaluative conditioning* have been offered to account for music-induced sadness in particular [23]. A later update to the mechanisms also includes aesthetic judgement (which has been taken to explain the enjoyment of sad music as well; [24]). We will discuss aesthetic judgement and the concept of beauty in the context of sad music in section 4.4. The mechanisms also have a direct impact on the issue of familiarity; unfamiliar music may induce emotions through *emotional contagion*, for example; a mechanism that capitalises on the affective cues of the music. However, *evaluative conditioning* and *episodic memory* are both capable of generating emotional experiences that are in direct conflict with music's affective cues, such as feelings of sadness induced by a cheerful-sounding song that reminds one of a close friend who recently passed away [25]. Even without these key mechanisms, listeners may construct meanings that lead to emotional experiences.

(iv) Music-induced sadness is not an emotional monolith, but better characterised as a spectrum of emotions, ranging from (a) highly pleasurable experiences to (b) feelings of comfort and relaxation, and even to (c) high-intensity

negative emotions such as grief [6,11]. These three types of experiences identified in recent studies will most likely require distinct explanations, and this holds the key to solving the paradox. In other words, the paradox only exists for the pleasurable and comforting aspects of sadness.

(v) Emotions are contextualised and culture-specific to some extent. Despite the fact that there are common embodied aspects of emotions, people's experiences of emotion vary across cultures, for example in *how* and *what* emotions should be experienced [26,27]. The emotions induced by music are often the result of an active emotion regulation. The pleasure derived from sad music is not different; experiences driven by sad music are known to be more prevalent in specific situations, are related to pursuing self-regulatory goals [28], and commonly take place in solitary situations [10] and in particularly poignant circumstances [6].

If we acknowledge these five premises as a firm starting point, we can more easily assess the explanations of enjoyable sadness that go beyond these well-known premises and offer unique explanations for the paradox.

1.1. Past overviews

The paradox of enjoyable sadness in the context of music has gathered attention from thinkers and writers throughout history (Aristotle, Hume, Kant), and possibly for that reason, philosophers have offered perhaps the most balanced discussion of the phenomenon during the last two decades [29–31]. Some of the recent explanations of the enjoyment of sadness in music utilise the route opened by the philosophers, which basically defaults to a lack of real-world appraisals and consequences. For instance, Schubert [32] postulated that sad music is experienced as enjoyable simply due to the aesthetic, safe context. Taruffi and Koelsch [23] expanded this explanation by bringing in the role of memories and deliberate savouring of emotions, whereas Juslin [33] also evoked the same rationale by explaining that sad music may combine two independent mechanisms, contagion of negative emotion and the aesthetic judgement mechanism that leads to an overall pleasurable response. Sachs and his colleagues [34] interpreted the paradox from the perspective of adjusting homeostatic imbalances. According to this interpretation, sad music enables the listener to “disengage from the distressing situation and focus instead on the beauty of the music” [34, p. 8]. While all these four explanations capitalise on the lack of real-world consequences of music, they fail to specify why sadness would be special, and why other negative emotions such as fear or disgust do not produce similar effects in the context of music.

Huron [35] has offered an interesting conjecture that is indeed specific to sadness. It assumes that listening to sad music is sometimes enough to trigger an endocrine response (prolactin release) relevant for alleviating the mental pain related to the experience of loss. This response is experienced as consoling and positive when the real-life consequences of loss are absent, as is the case with music. Although some evidence exists showing that hormone levels associated with such functions are modulated by emotion induction [36], the conjecture has not yet been empirically corroborated in the context of music.

Expanding the realm of explanations to account for the functions of music listening, Van den Tol and Edwards [37,28] have explained the appeal of listening to sad music in terms of distinct mood regulation strategies such as seeking connection, retrieving memories, validating or re-experiencing affects, and providing solace. However, these fail to identify the strategies as inherently related to the generation of pleasure. Nevertheless, this work highlights an interesting aspect of the puzzle by observing that listeners often feel displeasure due to painful memories whilst listening to music, but this affect is *transformed* into positive emotion (nostalgia, relief) afterwards. The identification of this “cathartic” experience has long roots in philosophy [30], but empirical evidence suggests that venting or cathartic processing is less efficient than distraction as a strategy for elevating mood after induced sadness [38]. Finally, it has been suggested that sad music may be experienced as pleasurable due to its power to overcome cognitive dissonance often associated with negative emotions. Although this hypothesis has not yet been directly tested in the context of sad music, the mitigation of cognitive dissonance could be one of the potential evolutionary benefits conferred by music [39].

In other fields of art, a number of creative explanations have been offered. The enjoyment of tragedy in films has been linked with beauty and portrayal of human perseverance [40], insights into human plight and existence [41–43], and re-appraisal of one's experience from different perspectives, some of which may differ from one's own emotional response (often called *meta-appraisals* [44] or *metacognitive self-reflection* [45]). It has been assumed that most of these explanations – with the exception of beauty – cannot be easily applied to the enjoyment of musical sadness, since they rely on narrative and propositional content that is often absent from music (except in operas, song cycles,

and in music that has lyrics). However, recent work investigating the effects of music on mind-wandering and Default Mode Network activation has revealed that listening to sad music elicits more self-reflection and meta-awareness than listening to happy music [46], which suggests that even instrumental music can facilitate meta-appraisal and related processes.

Recent theorising by Menninghaus and colleagues [47] has generated an accessible framework to explain the construct of “being moved”, which is applicable to the enjoyment of music-induced sadness. We will return to the concept of “being moved” later in section 3.1. More recently, Menninghaus and colleagues have proposed a Distancing–Embracing model to explain the enjoyment of negative emotions in the arts [12]. The first component in the model, psychological distance, is more or less the same argument as expressed previously by philosophers (i.e., the lack of real-world consequences, and art being regarded as separate from the normal world of actions). Distance in itself, we argue, cannot be a key factor, since greater immersion and intensity of felt (negative) emotion actually lead to stronger enjoyment in the context of the arts (for a more detailed critique on the model, see [48]). The other key component, the embracing factor, offers at least five different routes for transforming the induced negative emotions into pleasure via the interplay of positive and negative emotion, meaning construction, aesthetic virtues, genre scripts, and mixed emotions. While we find these broad distinctions useful, a major limitation of the model is the omission of the underlying mechanisms of emotion induction. Any account of the enjoyment of negative emotions in the context of the arts is incomplete without considering how the arts are able to evoke negative emotions in the first place. Furthermore, the pleasure derived from different negative emotions such as sadness and fear may rely on fundamentally different mechanisms. In this review, we will attempt to complement the insights offered by the Distancing–Embracing model by explicitly addressing the processes omitted in the model.

1.2. Organisation of the present review

This review is organised according to three broad levels of attention and explanation – biological, psycho-social, and cultural. Although the recent years have observed a rapid growth in psychological explanations and tentative signs of biological accounts, cultural explanations have dominated the topic ever since the Greeks documented the cultural manifestations of pleasurable sadness [30]. We argue here that what is needed is an integrative account where each level of explanation is understood as contributing to the phenomenon in a specific yet interconnected fashion; one cannot attribute the enjoyment of sadness in the context of music fully to cultural explanations, unless these are, in turn, operationally carried out by the psycho-social mechanisms requiring learning and interpersonal chains of communication. These mechanisms are subsequently driven by a chain of biological reactions originally serving adaptive purposes. In the past, the attempts to explain enjoyable sadness have been carried out at a single level, but so far consistent linking and critical evaluation of the levels has been missing. Connecting cultural, psycho-social and physical manifestations of this phenomenon will allow us to highlight the key issues and specificities at each level, and help to bridge some of the currently isolated explanations. Such an integrative account will also be helpful in linking findings from music listening with wider fields of inquiry.

In order to clarify the crucial distinctions between the three levels of explanation, we define a set of concepts relevant to different functional properties of sadness at the different levels. With *focus* and *function*, we refer to the nature of sadness, which has a different focus and function at different levels. At the *biological level*, this refers to adaptive mechanisms and responses related to coping with loss, that may lead to pleasure if certain conditions are met. The *psycho-social level* refers to interpersonal processes that can either serve to restore homeostasis (mood regulation) or have certain inherently pleasurable qualities (e.g. simulation of actions and emotions, or being moved). This level necessarily includes the machinery for recognising sadness in the music. The *cultural level* refers to a culturally constructed, collective understanding of sadness, where music has the potential to enrich the meaning of loss in different ways. The fundamental changes involved in turning the sadness into pleasure can be described in terms of the pleasure–pain dimension. We call such changes *hedonic shifts* and postulate that the three explanatory levels take up different ranges in the hedonic continuum.

2. Biological foundations

A biological account of emotions – consisting of physiological, neural and endocrine levels – is currently far from being understood in detail [49]. However, a great deal regarding the main components involved in emotions within

each level is known and connected to the functional architecture of emotions. If we are to make progress in explaining why musical sadness may be able to generate feelings of pleasure, we need to consider what happens at these levels when we experience sadness, why we have such mechanisms in the first place, and which function they have served in our phylogenetic development.

2.1. Evolutionary framework

A modern darwinian view of emotions stresses how certain states confer advantages in particular situations, and how natural selection shaped these into sub-types of emotions complete with regulation programmes adapted to particular situations [50], including that this selection has operated at the levels of individual, group, and culture. Most basic emotions are assumed to be innate and universal [51], and even evident to a degree in animals [52,53], although the accumulated evidence about the nature of distinct emotions is not convincing at the level of physiological signatures or neural mechanisms [54]. In the present work, we do not assume that strictly an innate and triggered system for sadness induction would be the only possibility since our interpretation aligns more closely with the constructionist account. However, characterising the functional nature of such an emotion will nevertheless provide valuable insights into the mechanisms involved.

Sadness as an emotion has conferred adaptive value by promoting behaviours and cognitive strategies suitable for compensation and recovery after irrevocable, real loss [7], first and foremost to the individual, but also to maintain group attachment [55], and to signal others either of surrender in case of crying [56] or just provide cues to others about one's mood state. In experiencing sadness, the configuration of these tendencies are low physiological arousal and reflective and critical information processing, often dubbed as “depressive realism” [57]. This reflective state is beneficial for the individual in coping with the loss, to consider the options in a realistic fashion. It also has social implications, if sadness – or particularly grief which is distinct from sadness – is perceived as social signal that directs social attention and solicits support from others [58]. To express biological sadness in our key terms, it is focussed on real-world implications to the individual, and negatively loaded in its hedonic value.

How could these physiological and cognitive elements of sadness be linked with the putative pleasure derived from sad experiences, which is sharply in contrast with the nature of any loss? The evolutionary perspective values both negative and positive emotions and regards the mind as a modular system, possibly allowing the modules to operate independently and serving other purposes than what they were originally intended for [59]. For understanding the enjoyment of sadness, the modularity and redirection of the function are vital distinctions, since they allow the possible mechanisms to be considered either as by-products [60], or as decoupled cognition using a more positive account by evolutionary psychologists [61]. The latter account has also been explained by means of *simulation*. According to simulation theory [62], fictional events are able to operate the very same cognitive and biological machinery involved in non-fictional emotion by means of simulation. More importantly, it has been proposed that we enjoy fiction – especially fiction involving complex or potentially distressing scenarios – because engaging in it is beneficial for us: Immersing ourselves in fictional scenarios and putting ourselves in the shoes of fictional agents enables us to simulate the experience of different types of events, emotions, and behaviours [63]. Not only does this simulation make us more prepared for various challenging scenarios in the real world, but it also enhances our empathy and theory of mind skills [63,64]. Furthermore, based on the most recent evidence from neuroscience, it has been proposed that all emotions – not just those experienced in a fictional context – would be based on prediction and simulation, and that with the help of information from interoceptive and sensory input, as well as past experiences, the brain creates experiences that can be conceptualised as emotions [65–67]. Although this account shifts the attention already to a higher level of explanation, it demonstrates that the inherent rewards of engaging in such activities may be important building blocks of how the paradox might easily arise. What separates this account from a by-product is that the fiction-driven, simulated emotional experiences are assumed to have evolutionary relevance, and even to be intrinsically rewarding [61].

We shall first look at the biological correlates of sadness at the level of functions and neuroendocrine markers and then briefly describe how sadness has been characterised in terms of psychophysiological and neural activation patterns.

2.2. A biological systems account

A closer look at the biochemical correlates of sadness is necessary to carve out a full argument of their role in real and fictional loss. In our map of concepts, the biological account of sadness places the emotion as a reaction to non-fictional loss, which has serious implications to the goals of an individual, and the response itself leads to negative affect (hedonic value). When we look at the processes in detail, the experience of sadness is associated with separate patterns of peripheral and nervous system activations (including the endocrine activity) that are consistent with the functional purposes of sadness described earlier. We call these adaptive, stress and consoling reactions.

In the *adaptive reaction*, the purpose of the system is to conserve energy by inducing a state of withdrawal by anergia and anhedonia. Such withdrawal is achieved through decreased serotonic and dopaminergic activity, and HPA dysregulation [68,69]. The stress reaction to sadness is similar in purpose, and refers to changes in the immune response, particularly to heightened inflammatory responses [70,71], which are associated with negative mood states.

The *consoling reaction* refers to the anxiolytic effects of prolactin and oxytocin, which are known to be associated with crying, feelings of social support, and negative moods. Both oxytocin and prolactin inhibit the sympathetic and HPA activity during stress, influence cardiovascular dynamics [72], reduce stress responsiveness on neuronal and behavioural levels [73], and are known to produce feelings of calmness, well-being, and consolation [74]. The consoling effects of prolactin have been well documented in crying [75] and nursing [76]. Oxytocin has similarly been reported to facilitate positive emotions, trust, and feelings of social support [77] despite the acknowledged measurement problems associated with these measures [78].

With respect to music-induced sadness, stress and adaptive reactions to sadness are unlikely to lead to increases in enjoyment, since the logic and the evidence is on the contrary [70]. Only the consoling reaction has the potential of generating pleasure in this context, since the complex endocrine response involved is associated with strong positive emotions (reviewed in [73]). This is, of course, what Huron's theory [35] about prolactin and the pleasure induced by sad music is all about.

Unfortunately the evidence to date concerning biochemical markers of music-induced emotions is scattered, and does not address these assumptions directly (see [79] for a review). Gerra and others [80] observed changes in a host of endocrine measures when participants were listening to techno music vs. classical music, whereas Evers and Suhr [81] recorded changes in serotonin levels after exposure to pleasant or unpleasant music, but found no differences in prolactin or ACTH (adrenocorticotrophic hormone). Choir singing has been demonstrated to modify neuroendocrine measures (TNF-alpha, prolactin, cortisol, and oxytocin), although whether these are emotion-related reactions or merely variations induced by the activity levels within the tasks, is still unknown [82]. Finally, Nilsson [83] has demonstrated that a music intervention increased the levels of oxytocin and subjective relaxation in comparison to a control group in patients recovering from open-heart surgery.

Based on these studies, however, one may only conclude that music itself is sufficient to modulate a variety of hormones but none of these studies have provided any evidence of these within the context of sadness. Studies using other means of emotion induction such as unpleasant and pleasant pictures [84] and films [36] have obtained tentative support for a selective pattern of prolactin and cortisol measures associated with mood changes induced by the manipulations. Also NK cell activity and immunoglobulins are known to be influenced by negative and positive mood manipulations [85,70]. One can assume that music would be able to generate a similar pattern of distinct reactions since it is at least an equally potent manipulator of emotions and moods [86].

In an analogous fashion, peripheral physiological (e.g., heart-rate variability, galvanic skin response, respiratory rate, temperature, and facial EMG) indicators of moods and emotions have been predominantly studied in the context of films inducing happy and sad emotions [87] or neutral, fearful and sad emotions [88] or variants of these. Music has also been used as an emotion inducer [89,90] in studies involving psychophysiology. Unfortunately, many of these studies have distinguished the emotions based on their arousal (sadness is a low arousal emotion whereas happiness is high arousal). Nevertheless, certain indicators such as skin conductance response, temperature, and respiration rate have been observed to differentiate neutral and sad emotions [88,33], although such nuances have not been explored within music yet.

To summarise, evidence concerning the hormonal and physiological responses associated with experiences induced by sad music currently do not exist despite a host of studies exploring the responses to sadness and music in general. If we take the findings from other topics of study (films and pictures), at least an assumption can be made that the low-level physiological mechanisms measurable from hormones and physiology could be associated with music-induced

sadness, but unless these reactions can be theoretically strongly connected to functional aspects of the process such as the adaptive or consoling reaction, the contribution of such signatures to the understanding of the topic is marginal. It is also worth noting that the postulated endocrine mechanism proposes a positive hedonic shift (from a very negative experience to a bearable but still a negative experience, see Fig. 1) but fails to explain how this shift would explain fully pleasurable experiences.

2.3. *Neural correlates of music-induced sadness and pleasure*

Neuroimaging studies suggest that music-induced emotions rely on some of the same networks thought to underlie everyday emotions [91]. With regard to music-induced sadness, functional magnetic resonance imaging (fMRI) studies have reported increased activation in the amygdala [92], hippocampus [92], parahippocampal gyrus [93,94], anterior cingulate [93,94] and various frontal regions [93,95] as a response to musical stimuli deemed as expressing or evoking sadness. It is noteworthy, however, that the activation of these areas is not consistently replicated across studies. In fact, some of the above-cited studies show no overlap in the brain regions they implicate in music-induced sadness [92,93]. Moreover, some of the areas associated with music-induced sadness, such as the amygdala and hippocampus, have also been linked to other music-induced emotions such as joy and happiness [91]. It also bears mentioning that some studies have failed to find any significant differences between activation patterns during listening to neutral and sad musical excerpts [96,97]. Therefore, on a close inspection of the literature, it is evident that neuroimaging studies have not yet revealed reliable and specific neural correlates of music-induced sadness.

Meta-analyses of neuroimaging studies [98,99] show that identifying distinct neural substrates for different emotion categories has proven difficult not only with regard to music-induced emotions but also more broadly in the cognitive neuroscience of emotion. Based on this evidence, it has been argued that discrete emotion categories such as sadness and happiness do not map onto specific brain areas [99] and that the search for such correlates is thereby fundamentally misguided. While this may be true, several more prosaic explanations related to methodological differences can also be offered for the discrepant findings regarding the neural correlates of music-induced sadness. As outlined in the previous sections, music-induced sadness comprises a spectrum of emotional experiences ([11], premise iv) ranging from genuinely unpleasant affective states to more pleasurable ones while in neuroimaging studies subjects typically simply rate their emotional response to musical excerpts on a sad-happy continuum. This almost certainly leaves much inter-individual variation in emotional experience and the underlying neural activation unaccounted for and might help to explain why results from neuroimaging studies looking at the “same” emotional experience of music-induced sadness do not converge. A related issue is that neuroimaging studies on music-induced emotions have not typically taken into account individual differences that might influence emotional responses to music (e.g. empathy, see section 3.1). More generally, there are inherent limitations in the current neuroimaging and the associated analysis techniques that may explain why the neural correlates of specific emotional states have remained elusive [100]. Pattern analysis of fMRI data [101] shows promise as a tool for disentangling neural networks for different music-induced emotions including sadness and for investigating whether the “neural signatures” of sadness generalize across music listening and conditions that elicit genuine, unpleasant sadness [102,103].

Music-induced pleasure has been repeatedly linked to activation of the striatal dopaminergic system including the nucleus accumbens and the caudate [104–107,92]. These results suggest that similarly to pleasure derived from other rewarding stimuli (e.g. food and sex), music-induced pleasure is mediated by dopamine release. Perhaps the most direct evidence to date for the involvement of striatal dopaminergic activity in music-induced pleasure was reported by Salimpoor et al. [108]. They employed ligand-based PET scanning as a measure of dopamine binding and found compelling evidence for heightened dopamine release in the nucleus accumbens and the caudate while subjects listened to self-selected pleasurable, chill-inducing music. Importantly, the activation of striatal nuclei has been reported not only for self-selected familiar music [104,108] or music that expresses and induces (arguably) unambiguously positive emotion such as joy [92,93], but also for unfamiliar music that induced more “complex” but still pleasant emotional responses. In one of the few studies that have explored the neural underpinnings of music-induced emotions other than the broad categories of happiness, sadness etc., Trost et al. [93] linked activation of the ventral striatum to a mixed music-induced emotional response characterized by both joy and sadness (termed nostalgia by the authors) suggesting that music that listeners deem as sadness-inducing can evoke activity of the striatal reward system.

Neuroimaging studies on the neural correlates of music-induced emotions have tended to shy away from functional explanations on why music engages the neural systems outlined above. As a notable exception, the activation of the

dopaminergic reward system during listening to pleasurable music (presumably including pleasurable sad music) has been suggested to be driven by the degree to which musical events match implicit predictions about how music unfolds in time [109], akin to the musical expectancy mechanism proposed by Juslin and Västfjäll [22] and the ideas of Huron [110] and Meyer [111]. Based on neuroimaging evidence suggesting that music can engage the putative human mirror neuron system, others [112] have discussed the possibility that affective responses to music might be supported by simulation of the emotion conveyed by the music (this idea and other similar ones are discussed in more detail in section 3.1). The following sections outline several additional psychological phenomena that have been identified as possible mediators of pleasure derived from sad music including the experience of beauty (see section 3.1), being moved (see section 3.1), nostalgia and the attribution of social surrogacy (see section 3.2) or meaning to music (see section 4.3). However, there is thus far practically no evidence on how these mechanisms are implemented in the brain during sad music listening although initial steps towards mapping neural basis of some of them have been taken in the context of both music [113] and other art forms [114]. For example, when investigating the pleasure evoked by auditorily presented poems, Wassiliwizky and colleagues [115] have found temporal correspondences between chills (and preceding activity in the nucleus accumbens) and physiological markers of negative affect (corrugator activity), suggesting that peak aesthetic pleasure can co-occur with the experience of negative emotions.

3. Psycho-social explanations

The psycho-social level of explanation covers a broad range of topics and mechanisms relevant for emotions and music. Here we first focus on the principles that are necessary for bringing music into an interpersonal context, building on the notion of simulation described in the evolutionary section. These elements are broadened by an account of empathy and how it links with the enjoyment of sad music through a specific type of experience that can generally be termed “being moved”. The second theme focusses on socio-emotional benefits of music listening with an emphasis on music’s ability to provide company and comfort.

3.1. *Empathy, embodiment, and ‘being moved’*

Music is imbued with connotations of human emotional expression on multiple levels; it emulates the expressive qualities of human vocal communication and movement [116,117], and conveys a sense of agency; both as intentional sounds organized and produced by a human agent [118], as well as in the form of a “virtual person” [119] or an imaginary persona inhabiting the music [120]. Therefore, it has been proposed that there could be some embodied, empathic basis for musical understanding and meaning-making processes. For instance, certain sounds produced by the singing voice or specific musical instruments might correspond to affect vocalisations characteristic of emotion-related physiological changes. This physiological state theory [121] has received support from a range of emotion recognition studies in music [122,18] and speech [123,124]. In the context of sad expression, descending melodies, soft timbres, and slow tempo would convey the meaning of lamentation by mimicking the sounds and melodic lines of the grieving human voice. The mimetic hypothesis, proposed by Cox [125,126], ties together embodied knowledge about emotional states and dynamics of tension and release in music, suggesting the emotional meaning of a piece of music would be partly the result of mimetic participation. Thus, it is entirely plausible that listeners would – at least in some occasions – respond to music as they would to the observed experiences of another person – with empathy.

Empathy can be broadly defined as a process by which we can come to understand and feel what another person is experiencing. An instance of empathy can involve “automatic”, non-conscious processes such as emotional contagion, as well as more conscious, reflective processes such as mentalizing and perspective-taking [127,128]. Importantly, both types of processes have been proposed to be involved in the emotional responses evoked by music [22,129,130]. In fact, it has even been proposed that Theory of Mind (ToM), the ability to infer the emotional and mental states of others; to “understand each other as ourselves” [131, p. 148], may have been fundamental to the emergence of music [131,132] and culture in general [133]. Furthermore, a capacity – as well as the motivation – for shared intentionality is also essential for successful interaction and joint action [133]. Although it may be more apparent how shared intentionality and affective and temporal alignment (i.e., entrainment and empathy) facilitate – and are involved in – music-making as a form of joint action, similar processes may also take place in the context of music listening.

Experimental evidence from multiple studies supports this view, showing that empathy and emotional contagion contribute to emotional responses evoked by music listening – particularly in the case of sad music – by intensify-

ing emotional reactions that match the emotional expression of the music [134–136]. This empathic responding can occur on multiple levels, ranging from pre-conscious, internal mimicry of the emotionally expressive acoustic and gestural cues [112] to imaginative perspective-taking and mentalizing evoked by the process of music listening [120, 129], enabling listeners to explore and simulate emotional experiences in a safe and controlled setting. Deliberate perspective-taking and narrative imagery have both been shown to mediate and intensify the emotions induced by music (including sadness; [135,136] even at the level of psychophysiology [136]). Furthermore, stronger empathy appears to be consistently associated with more intense music-induced sadness, and greater enjoyment of sad music [137,135,138].

But why should stronger experienced sadness lead to more enjoyment? Similar findings have been obtained with sad films [40,4], and it may be this pattern of findings is related to a broader phenomenon concerning sadness portrayed in – and elicited by – fictional stimuli. Using a set of 38 sad film clips to investigate the enjoyment of fiction-induced sadness, Hanich and colleagues [4] discovered that the positive relationship between felt sadness and enjoyment was almost entirely mediated by feelings of “being moved”. Moreover, Hanich and colleagues found that portrayals of prosocial behaviour appeared to play an important role in the feelings of being moved, further hinting at the significant role of empathy in the enjoyment of sad fictional stimuli. A similar pattern of relationships emerges when emotional responses to sad music are explored: Vuoskoski and Eerola [139] discovered that the initial positive relationship between music-induced sadness and liking was fully mediated by feelings of being moved. Furthermore, listeners who had a more empathic disposition appeared to experience stronger feelings of being moved. Interestingly, a recent meta-analysis by Zickfeld and colleagues [140] established that there is a consistent positive relationship between trait Empathic concern [141] and feelings of being moved and sadness evoked by films and other stimuli. In fact, Zickfeld and colleagues go as far as to suggest that empathic concern and being moved might both be part of the same construct; a positively valenced pro-social emotion that is elicited by the sudden intensification of communal sharing relationships. In similar lines, Menninghaus and colleagues [47] postulate that feelings of being moved may serve the function of activating the value of social bonds and prompting prosocial behaviour.

Since strong positive correlations between felt sadness and being moved were observed by both Hanich and colleagues [4] and Vuoskoski and Eerola [139], it is possible that felt sadness contributes to the enjoyment of artistic and fictional stimuli by intensifying feelings of being moved. Hanich and colleagues postulate that sadness – being a nominally negative emotion – intensifies feelings of being moved more effectively than positive emotions (such as joy) due to the higher intensity and memorability associated with negative vs. positive emotions [142,143]. Given that expressions of sadness and grief are likely to elicit social support and helping in others, it is also fathomable that listening to sad music may evoke a pro-social emotion akin to empathic concern or being moved – especially in those with a strong disposition to respond to others’ experiences with empathy. Thus, the pleasure of being moved is far from being purely *hedonistic*; it is strongly intertwined with interpersonal aspects (see section 4.4 for a discussion on *being moved* in the context of aesthetic appreciation and beauty).

3.2. Mood regulation via social surrogacy and nostalgia

Outside fiction, experiencing negative emotions is known to increase the amount of social interaction and sharing of emotions [144], and negative emotions are willingly shared, even though the act of sharing is thought to reactivate the aversive aspects of the emotion (cf. [145], p. 74). The function of engaging in these activities is assumed to be related to the understanding and comfort, feelings of belonging, and emotional support such sharing entails [146], in other words, to mood regulation and specifically to mood improvement. In this section, we review the situational and social reasons for listening and deriving pleasure from sad music, and broaden the scope beyond the hedonic to eudaimonic aspects of sad music. Here we assume that mood regulation aims to convert a negative hedonic experience to a mildly positive one, and that such a *hedonic shift* crosses the boundary between negative and positive valence (see Fig. 1).

Listening to sad music seems to fulfill the criteria for mood regulation. Although retrospective recall reports suggest that people engage in listening to sad music in diverse situations [147,6] the most consistent triggers of such episodes are autobiographical memories and significant situations in life (breakup, death, etc.) when people have distinct needs to regulate their moods. In laboratory studies, it has also been observed that people choose music that is congruous with their mood; when in negative mood, sad music is actually preferred over happy music [148,149], and even more specifically, listeners tend to choose sad music after interpersonal over noninterpersonal losses [150]. Interestingly,

when some time has passed after a negative mood induction people are more inclined to choose uplifting music in order to repair their mood [151]. One suggested reason for this shift is that listening to sad music provides the opportunity to sort out one's feelings and thoughts. Indeed, a small-scale empirical study seems to suggest that people, who listened to sad music for that purpose, reported feeling more positive [28].

How do such mood repair strategies actually work in this context? There are multiple, overlapping proposals that emphasise either the act of bringing company to the listener (*social surrogacy*) or providing a platform for reflection via memories (*nostalgia*). Some aspects of these two proposals are consistent with the more generic musical mood regulation strategy of solace [152,153], which is used by listeners who are sad and troubled to feel understood and comforted. This strategy emphasises the listener's attention on the lyrics which can give voice to feelings or experiences that one might not be able to express oneself [153]. Further, lyrics that resonate with the listener's personal experience contribute to the personal meaning and comforting effect of a song [154,155].

Music listening seems to provide a sort of social connection, a *social surrogacy*, where the listeners enjoy the mere presence of a virtual person represented by the music. As the simple presence of another person who is in the same mood can help to cope with negativity [156], Lee, Andrade, and Palmer [157] suggest that sad music might provide comfort simply by signalling a mood-congruent other. Indeed, music has been described as having friend-like characteristics [153,158]. Qualitative investigations of engagement with sad music suggest that sad music can be experienced as an imaginary friend who provides support and empathy after the experience of a social loss [157,28]. Sometimes the social surrogacy has been described as an *emotional communion* [159], where a listener feels that the music establishes a connection with the feelings of the composer as well as other listeners. Also, the concepts of transportation and identification are relevant for social surrogacy. Song lyrics might provide a means of being transported into another space or narrative [160] or give the listener an opportunity for social connection with the singer through identification [161]. Transportation as well as identification are supposed to allow listeners to enjoy to forget about themselves [162], but we have little evidence to date whether the social surrogacy would be able to produce strong pleasure instead of mere slight positive shift in mood in the context of sad music.

Memories that people retrieve by listening to sad-sounding music often include foregone times. *Nostalgia* is known to be associated with mixed emotions or positive emotions depending on the situation [163]. The argument goes that sad mood can motivate people to listen to music associated with sadness as a means to retrieve nostalgic memories. Such reflective revisiting of memories may enhance the mood, especially if the memories are related to pivotal and meaningful moments in life [164], which bolster social bonds and generate positive affect [2]. By eliciting nostalgic memories, listening to sad music may also induce feelings of connectedness to loved ones [37]. As music is such a powerful trigger for personal memories, it might help replenishing feelings of connection and belonging simply by eliciting memories of a positive social relationship or interaction [165].

To recapitulate, sad music seems to be associated with different goals of mood regulation. Even though pleasure is not explicitly mentioned as the goal of the regulation, at least two broad strategies described above are assumed to lead to a positive emotional state such as feeling emotionally supported or being in a better mood, which might pave the way for or even constitute itself as pleasurable experiences. In other words, the mood regulation strategies describe a clear hedonic shift from negative to positive, although we assume that both are fairly mild compared to actual negative loss or the full pleasure obtainable through music listening, since the mood regulation is such a precise functional strategy (see Fig. 1). The evidence for the two highlighted conjectures, social surrogacy and nostalgia is still rather scarce in studies of sadness and music. However, the strategies may be congruent with each other if the time-scale of the process is defined more clearly in future studies. It is also clear that social surrogacy and nostalgia are bound in the moral and cultural values of the society that require dedicated attention.

4. Cultural perspectives on enjoyment of sad music

As stated in the beginning (premise v), the social reality with its rules, practices, values, and cultural scripts shape the experienced emotions [26,13]. Thus, individuals raised in a certain culture have specific cultural competence for understanding the scripts of their environment, which then again shape the social reality in which the person is living and experiencing emotions. Musical traditions can be seen as part of cultural transmission of knowledge, a.k.a. *cultural ratcheting* [132], which can take a form of narratives that situate entities of human experience meaningfully into their environment [166]. Narrative forms allow for complex organisation and understanding of experienced events in both personal and larger sociocultural levels, which enables one to understand what self is, what it means to remember

one's past, and how these concepts relate to one's social environment [167]. Cultural context affects the content and style of any of these narratives (for cross-cultural differences in autobiographical remembering, see [168]). This kind of cultural variation is particularly apparent in the case of cultural artifacts – such as music.

4.1. *Musical traditions and learned codes for sadness*

In the Western world, the purpose of music has been considered to be to both convey some affective meaning as well as inducing affective responses in the listener at least since the 16th century [169]. Thus, well-articulated rules and cultural ideals for composition have guided their ways of expressing these affects during the past 500 years or so [170,31]. For instance, embodied affective meanings and bodily movements were important part of music theory in Baroque era, when the whole doctrine of the affections (*Affektenlehre*) was created for imitating and summoning both positive and negative emotional reactions in the listener [31]. While some of these musical codes might still be accessible to listeners of the present day, certain “topoi” might be lost, as they refer also to their contemporary musical traditions (e.g., different styles of dance; cf., [171]), which do not exist in our present-day cultural practices. Although it has been suggested that the most important musical cues for the expression of sadness in Western music (low pitch range, slow tempi, and minor mode – see e.g., [172]) might have a universal, embodied basis, and reflect the effect of emotions on our vocal output (see [173,174,19]), not all meanings have such clear mappings, but require learning. For instance, Nieminen and others [175] found that children start to associate conventional “sad musical features” (such as minor mode) with sadness not prior than at the age of eight (see also [20]).

Furthermore, conceptual knowledge about emotions keeps changing and developing through both individual's personal life history and its reflection, and interaction with the social reality, as people negotiate, share, and reproduce existing meanings as well as give new meanings to old expressive cues within a (music) culture. By continually reflecting and refining their ways of musical expression, musicians have done their share of cultural ratcheting [132], which has led to our present understanding of what sad-sounding music sounds like – and what do the emotions associated with it generally mean. This is a generic principle acknowledged widely even to influence the types of emotions different cultures promote [176]. Thus, listeners experienced with a certain music culture are better in recognizing a specific sad musical expression of that tradition [19], and emotionally reacting to it, than the listeners not familiar with the music culture – in fact, when it comes to a foreign musical tradition, the sad expression might not be recognised at all [177,178]. For example, Western listeners may be more inclined to believe that listening to music is to give us powerful but private emotional experiences because of the lore in our culture, whereas in other cultures, these emotional responses might be completely different and are embedded in social activities, as Robinson [31] has proposed. Thus, although the Western concept of music-induced sadness is often related to solitude and privacy [10,179], this does not necessarily apply to listeners with other kind of conceptual knowledge about music or sadness [177]. We do not have enough evidence relating to the differences in sadness and music across cultures, but there are well-documented differences in cultural expressions of sympathy [180], and anger and shame [181].

Most cultures have specific musical traditions for expressing sadness and other negative emotions. For instance, musical *laments*, which express grief both verbally and non-verbally (e.g., vocal gestures similar to crying), exist in several cultures [182,178,183,184], but also other forms of expression that do not seem as obvious for a Western listener can be related to sadness [177]. In the Western context, music has a visible role in death rituals, such as funerals, but they are not the only occasions where sad music is being played – in fact, the pleasant kind of sadness is hardly ever experienced in relation to funeral music [11].

Thus, in addition to bereavement, in the Western music culture, this cathartic form of musical expression coexists with a more abstract, *aesthetic* expression of sadness, which does not need to have any clear connection to personal loss, nor does it need to be listened to for solely comforting purposes. For instance, in a recent qualitative study [11], a dominant proportion of participants described not only their aesthetic appreciation of sad music, but also associated sadness with aesthetically appealing qualities. In these descriptions, sadness had little to do with pain or suffering, and was associated with positive or even desirable concepts such as beauty, honour, and righteousness – clashing with the psychological concept of sadness as a negative emotion. The question of *why* this cultural ratcheting has kept mingling sadness with pleasure throughout history is of course rather impossible to answer, but we can nevertheless articulate the cultural practices associated with music and sadness in the Western culture in more detail.

4.2. *Sad music as a form of cultural narrative for tragedy*

There has been a long tradition of associating noble qualities with sadness and tragedy within Western cultures: Aristotle believed tragedy was superior to other forms of art, and it was seen as “the very measure of depth and maturity” by the post-Hegelians [185]. Sadness has not always been considered as something that should be avoided, but, conversely, as an indicator of great sophistication, religious devotion, providing even a certain degree of enjoyment, as was the case in 19th century Europe and the United States [8,186]. Furthermore, these honourable qualities have been an important part of the concept of sadness throughout human history: the existence of misery, and feelings of melancholia, grief and other dysphoric emotions have been seen as signs of virtue, creativity, and intelligence in different times and in different cultures [187]. From a cultural–historical perspective it is no wonder that artists, for their part, have expressed these highly valued features of human life in multiple ways, and created different kinds of cultural narratives for tragedy in different forms of arts.

Tragic art draws from the existing repertoire of cultural narratives that also define the meaning-making parameters of individuals’ lives [188]. Fiction provides its own repertoire for meaningful information, or *conceptual knowledge* [65], about sadness and tragedy. Thus, tragic art is more than only something “very, very sad”, because there are moral and normative aspects involved in cultural narratives for tragedy [185]. It provides us the means to have rich emotional experiences, which may be psychologically rewarding in its own right [63], but it also offers culturally constructed meanings for concepts such as human existence and mortality.

4.3. *Musical sadness and reflection on the meaningfulness of human life*

Tragic art can give *value* to sadness and pain, or even create an illusion about the noble nature of human suffering [189]. Hence, it offers contextual motivation for the existence of negative emotions, which can then be experienced as being more than just personal pain – it provides conceptual knowledge about sadness being socially valuable and thus attractive – even pleasurable – in certain contexts [11]. To express this in terms of the hedonic shift, we assume that the starting point of the cultural level of explanation is usually already positive (on the hedonic continuum); we usually engage with art objects voluntarily, and assume an aesthetic mode of listening. For this reason, the hedonic shift – if successful – can be assumed to move from mildly positive to very positive (see Fig. 1).

It might be that the unique quality of music as a cultural narrative for tragedy lies in its ambiguous nature that is, as Nussbaum [190] proposes, both general and particular at the same time; the listener is free to interpret musical cues for sadness, and reflect on their own experiences in a very particular or general level. Instrumental music in particular generates unspecific musical landscapes that afford many different kinds of interpretations, from which the listener may conceptualise their personal emotional experiences. However, even with accompanying text, music may add the kind of conceptual input to the experience that text alone cannot produce – thus, two songs with the same lyrics produce different emotional expressions due to the two composers’ unique styles of organising their musical material [190]. Nonetheless, musical expression gives special *meaning* to the emotional states it portrays; it is not just pointless sadness, but there is some reason or meaning to it [189]. Such experiences fall under *eudaemonia*, which refers to life satisfaction, contentment and feeling good [191,192], not dissimilar to the Chinese discourse of *savoring* that includes negative experiences [193]. Eudaemonia is a departure from *hedonic concerns* by focussing on insight and meaningfulness of human life. Oliver and Raney [194] found evidence that these two different goals in the pursuit of happiness evoked by fiction elicit different types of affective responses, and they are related to people’s preferences in media entertainment: individuals with higher hedonic motivations were more likely to prefer entertainment eliciting pleasurable, “fun” affect, whereas individuals with eudaimonic motivations preferred entertainment eliciting more ambiguous or even negative affect. They suggested that eudaimonic motivations are related to “truth”-seeking – even at the expense of hedonic pleasure. Thus, sad music may provide meaningful conceptual information – or act as an “affective sandbox”, as Livingstone and Thompson [132] suggest – for some listeners by portraying more sombre human themes such as mortality and personal loss. Such contrasts, in turn, are also known to be related to experiences of being moved [4], discussed earlier. Menninghaus and others [47] have proposed that there is “special relevance and meaningfulness often attributed to feelings of being moved” and that these are primarily due to the combination of the special antecedent focus of these feelings (usually relating to significant relationships and/or critical life events), as well as the cognitive appraisals for their compatibility with social norms and (self-)ideals. Direct evidence supporting the role of musical sadness as an instrument for reflecting on the meaningfulness of the human condition does not exist

yet. However, the observations made in the context of studies involving feelings of being moved, which suggested a link between the intensity of being moved and sadness [40,4], could be loosely interpreted to support this notion.

4.4. *Aesthetic appreciation and beauty*

Aesthetic appreciation is intrinsically embedded in culture and historical tradition, and overlooking the centrality of these contextual factors has not typically yielded useful insights. For instance, Juslin [24] and others [34] have proposed that the enjoyment of music-induced sadness could be explained simply in terms of pleasure drawn from aesthetic appreciation or, in other words, the “beauty” of sad music. Specifically, Juslin suggests that “It is not that the sadness per se is a source of pleasure, it only happens to occur together with a percept of beauty” [24, p. 258]. In similar lines, Menninghaus and colleagues [12] outline “Aesthetic virtues” (i.e., the aesthetically appealing use of the media of representation) as one of the central components of their Distancing–Embracing model. But what exactly makes sad music “beautiful,” and could sadness itself not be an important contributor in the concept of beauty? Indeed, there is a long tradition of associating beauty with tragedy, sorrow, and ruin in Western art: From the medieval troubadour tales of unattainable love to lyrical romantic portrayals of “beautiful death” in the 19th century operas and “death songs”, the transience and the dark sides of human life have been the building blocks of the concept of beauty throughout history [186]. More recently, empirical investigations have shown that perceived sadness and beauty tend to be highly correlated in such diverse stimuli as film music excerpts [195] and poems (where patterns of poetic diction have been manipulated; [196]).

The concept of “beauty” is undeniably central to the aesthetic appreciation of music [197,198], although aesthetic experiences comprise other components as well. Despite being a salient descriptor of aesthetic appreciation for most listeners [197], the scientific definition of “beauty” is notoriously difficult, and the constituents of musical “beauty” are not yet well understood [198]. However, current views of musical ‘beauty’ emphasize the interaction between the perceiver and the object: beauty is considered to emerge from a relationship between the listener and the music (conceptualised as perceptual fluency or processing dynamics [199]), rather than any ‘objective’ features of the musical material or ‘subjective’ features of the listener alone [24]. Furthermore, recent findings as well as past discussions [200] suggest that there may be a significant emotional component that contributes to the association between beauty and sadness. Vuoskoski and Eerola [48] aimed to elucidate the interconnections of sadness, beauty, and liking in a systematically selected set of film music examples. They found that the initial positive correlation between sadness and beauty was fully mediated by movingness, and that movingness – rather than beauty – also mediated the relationship between sadness and liking (see subsection 3.1 for a discussion on empathy and being moved). “Being moved” has been conceptualised both as an interpersonally significant emotion that activates (and is activated by) pro-social behaviour and the value of social bonds [47,140], as well as a pleasurable aesthetic emotion [201] often accompanied by chills or frissons [202,203]. This dual nature of “being moved” suggests that percepts of beauty must conform with prosocial norms and ideals, and that, in order to be experienced as beautiful, music may have to be perceived as conveying prosocial intentions [204]. However, more exploratory empirical research is undoubtedly needed to better understand both phenomena in the context of music listening.

Although the degree of conceptual overlap between “liking” and “perceived beauty” remains unclear, it appears that feelings of “being moved” contribute to both phenomena, and mediate their association to felt sadness in the context of music listening [48]. In light of these findings, it appears that Juslin’s assertion (that music-induced sadness is pleasurable only because it happens to co-occur with a percept of beauty) is limited, as feelings of sadness actually appear to contribute to perceived beauty and liking by intensifying feelings of being moved. It could also be argued that those listeners who enjoy listening to sad music have learned conceptual knowledge about the “beauty” and the social value of sadness as an emotion, which, together with pleasant musical features, may contribute to an experience of “being moved” by music.

To summarise, musical emotions are always experienced in a particular cultural context, in which the social rules, scripts, and concepts of that culture shape these experiences. In the Western context, there are historically constructed concepts for sadness that highlight the socially valuable and aesthetically appealing aspects of that specific emotion. These concepts are being used in creating and maintaining cultural narratives, which, in turn, can be used in creating personal meanings for human existence and other cultural concepts, such as beauty or tragedy.

5. Summary and discussion

5.1. Benefits of an integrated framework

The aim of the present work was to provide an integrative account of the elements involved in the enjoyment of sadness associated with music. Our main argument is that past research has tended to consider only one particular level of explanation at a time, and taken concepts and notions from the other levels as given. A critical look at the explanations provided by biological, psychological, social, and cultural levels clarifies the paradoxes and confusions related to the extant findings, and provides us with more precise conceptual tools for future research. For instance, the notion of consolation through sad music has different meanings at different levels that are not necessarily consistent with each other. At the biological level, this term has been used in conjunction with homeostasis and specific responses (e.g. prolactin, oxytocin) that are involved in mitigating the impact of loss. At the psycho-social level, consolation still refers to mood regulation, but it emphasises interpersonal processes and is explained through social surrogacy and shared emotions. Currently we have no evidence to suggest that mood regulation through music would be able to utilise the specific biological consolation mechanism. Consolation at the cultural level is associated with acts of consoling (cultural traditions representing, for example, rhetoric oration at funerals), but these acts have diverse meanings and qualities that are embedded in history and culture. One could argue that common ritualised symbolic acts (such as Chopin's Piano Sonata No. 2 in B♭ minor, a well known funeral march) stems from biological and psychological elements that initially operate at the individual level, and that the cultural symbols provide shared, agreed representations of loss and consolation that allow the community to collectively participate in the putative consoling process. However, since the current evidence within the levels is limited at best, such linking between the levels of explanation is not only premature, but can also lead to dubious analogies or misattributions across the levels.

5.2. Current state of evidence

Our approach paints a sombre picture of the current understanding of the enjoyment of sad music. There are several gaps and limitations in our knowledge of the key issues. At the biological level, we simply do not understand the complexity of the hormonal and neural systems in conjunction with emotions and their functions in order to make strong inferences from the few existing observations. The neural evidence is mainly limited to areas involved in experiencing pleasure while listening to music, but the evidence concerning a more precise signature of enjoyable sadness may not even be a meaningful target to pursue, since the direct indicators (neural, hormonal, psychophysiological) will most likely reflect lower levels of representation (e.g., core affects) and not higher-level meanings. However, direct links to functional mechanisms – such as the specific hormonal consolation response – could at least provide valuable evidence for the claim that such low-level homeostatic functions are involved in the process (Table 1).

The empirical evidence for the different explanations offered within the psycho-social level are still patchy. Empathy has repeatedly been linked with pleasure associated with fictional tragedy [205,4] and sad music [48], and the notion of being moved seems to be a crucial proxy for conceptualising those experiences that encapsulate the most enjoyable aspects of sadness. The other promising, tentative explanation at this level relates to the intriguing notion of music being able to function as a substitute for another, sympathetic being, which in itself provides company and comfort. Both processes deserve more attention in the future, and require analytical breakdown of their components.

When we traverse the levels of explanations, we also cross disciplinary boundaries and epistemologies that come with the disciplines. The concept of “evidence” in biological sciences is not the same as in social sciences, and the term requires yet another reading in humanities. Thus, our interpretation of the evidence in the cultural level suggests that music and sadness have been coupled together in contemporary Western culture, and that such couplings are undeniably cultural conventions that may not have direct counterparts in other cultures or times. This challenges the notion of universal recognition of sad music, but it does not necessarily invalidate the explanations provided at the different levels – provided that they can be achieved with a diverse set of musical cues. However, most cultures do have specific music associated with funerals (e.g., laments, music for mourning), and the rudimentary musical cues of sadness such as slow tempo and dark timbre might directly reflect the physiological state associated with sadness. However, we are doubtful that such universal uses of music in mourning rituals would have direct links to deriving pleasure from the music. Instead, we surmise that the contemplative and aesthetic mode of music listening might be a particularly Western-oriented concept, and it may be the act of simulation and empathic engagement with a virtual

Table 1

Summary of key mechanisms, hedonic shift, and evidence across the three explanatory levels with respect to pleasure associated with sad music.

| | Biological | Psycho-social | Cultural |
|----------------------|---|--|---|
| Level | Individual | Interpersonal | Collective |
| Mechanisms | Homeostasis | Mood regulation, empathy, memories, social surrogates | Shared meanings via learning and cultural ratcheting |
| Hedonic shift | [--] to [-] | [-] to [+] | [+] to [+++] |
| Measures | Neural, hormonal, physiological | Behaviours, self-reports (e.g., pleasure, being moved), narratives | Historical and ethnographic evidence |
| Evidence | Non-existent, or pertaining only to actual sadness or music-induced pleasure | Positive evidence for mood repair. No evidence for social surrogacy and nostalgia, yet. Indirect evidence for empathy | Some supporting evidence in recent Western history and self-reports |
| Caveats | Functional roles and physical correlates of biological systems not fully understood | Mood regulation points to mood change, not pleasure. Mainly correlational evidence linking trait empathy and pleasure. Lack of research emphasis on social context | Lack of cross-cultural perspectives and only a few historical analogies |

agent that contributes to enjoyability of the experience. If this turns out to be true, the paradox of pleasurable sadness is also a profoundly Western construct, which has direct implications for the universal relevance of the explanations.

5.3. Key processes involved: Simulation and hedonic shift

Our review has provided some tantalising analogies and conceptual similarities. We adopted a constructionist account of emotions, which has simulation as the core mechanism. Simulation, interestingly, is also at the centre of the only explanation specifically geared towards the pleasure generated by music-induced sadness [35]. This conjecture claims that music allows us to simulate the feelings of loss so effectively that it triggers a defensive response that serves to alleviate mental pain. In the absence of actual loss, this response produces a pleasurable feeling. At the psycho-social level, the process of simulation was fleshed out in more detail with regard to Theory of Mind, music as a virtual person, the physiological-state theory for decoding the mapping of expressed of emotions, and aspects of empathy. Simulation remains a core process even though the object of simulation is not a sentient being but rather the emotional expression conveyed by music. This expression can take various forms in different situations; music acting as an empathic friend; providing comfort through meaning, familiarity and lyrics; reminding of nostalgic memories; or merely providing conceptual knowledge about sadness by imitating it in a particularly moving manner. The available empirical evidence frames aspects of empathy as the moderating variable in experiences involving pleasurable sadness and feelings of being moved. However, closer dissection of the types of empathic engagement and the process of separating contagious and reflective aspects of empathy is critical. Finally, all cultural explanations also rely on our ability to simulate fictional and imaginary worlds that are based on shared assumptions requiring culture-specific competence. The pleasure at this level is not chiefly derived from a particular chemical response or interpersonal comfort, but from our reflections and meta-cognitive appraisals of the rich cultural meanings associated with the experience.

One of the central missing pieces of evidence is the actual process and time-scale of the transformation of sadness as a negative emotion to something that is experienced as positive. Most of the putative explanations offered at each level imply a dramatic transformation from negative to a positive hedonic state, but without qualifying this in any way. We want to limit and specify such a process by framing it as a *hedonic shift*. In this, a nominally negative emotional expression, act, or experience, shifts towards positive valence in terms of the core affect; the hedonic dimension. This approach differs somewhat from accounts offering a “mixed emotions” explanation to the sadness paradox [24, 12], where the overall experience becomes pleasurable due to a more positive concomitant emotion. We view “mixed emotions” as conceptual acts, existing mainly at the conscious, experiential level [14], and instead focus on delineating the changes in the underlying core affect. The proposed hedonic shift is gradual and limited in range with regard to

each level and explanation. For instance, at the biological level, the comfort response is triggered by a very negative hedonic state (real loss), and provides merely a shift from purely negative to slightly less negative [35]. As such, it does not really claim to explain the pleasure derived from such an experience (although the affective state induced by sad music is hardly comparable to actual loss in its hedonic tone). The hedonic shifts postulated at the psycho-social level relate mainly to mood regulation processes (e.g., social surrogacy and nostalgia), where the starting point is typically a negative hedonic state, albeit milder than the one triggering the comfort response. As the goal of these mood regulation processes is to repair negative mood, the comfort derived through surrogacy or nostalgia shifts the hedonic state to a mildly positive one at best. Indeed, the literature exploring the uses of sad music in mood regulation suggests that such processes are unlikely to lead to strong experiences of pleasure [28]. At the cultural level, the starting point is not loss or negative mood but engagement with art, which can be considered at least neutral or more likely slightly positive. Again, the hedonic shift is assumed to be fairly limited, but when made from such a positive starting point, the reflective engagement with negative expression allows the listener to embark on a journey that makes her realise how fortunate she actually is (according to the eudaemonic explanation), or experience the feelings of being moved, both of which are often reported as highly pleasurable. We have summarised these limited one-directional hedonic shifts in Fig. 1.

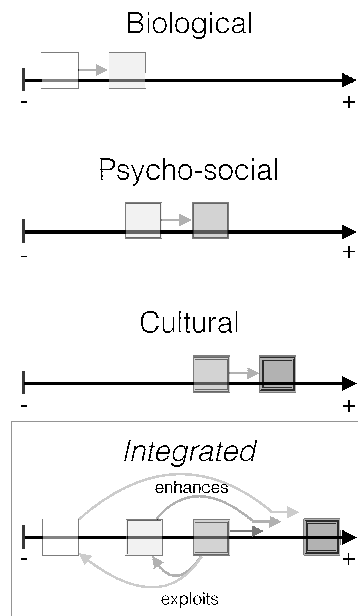


Fig. 1. Hedonic shift at different levels and integrated account of the shifts.

The three uppermost hedonic shifts illustrate the approximate change predicted in an optimal case for each explanation (hormonal comfort response at the biological level, mood regulation at the psycho-social, and being moved or reflecting meaning at the cultural level). While we do not have precise locations for the start and end points on the hedonic continuum, the diagram highlights how the shift on each level has a restricted range. Acknowledging this alleviates pressure from the expectation that a particular process at a specific level could somehow convert a nominally negative emotion into something akin to rapture and intense pleasure. The integrated summary at the bottom attempts to sketch the ways in which such experiences are nevertheless possible within the framework; the appeal of sad music may lie in capitalising on multiple levels of explanation; music *exploits* the narratives and meanings embedded in culture, which in turn exploit the sense of social connection and empathy in the listener, and – tentatively – some of these processes could have their roots in primitive neural and chemical functionality aimed to mitigate the experience of genuine loss, which in turn might *enhance* the hedonic shift.

Even though we have outlined the different processes at the three levels separately, one could also make an argument that there are hierarchical relationships between the levels where the higher levels could be seen as stylised

conventions of the instances at the lower levels; mood regulation with mood-congruent (negative) music initially amplifies the negative mood and capitalises on the proposed biological mechanism aimed to restore homeostasis, for example. These individualised instances of self-regulation with the use of music (as social surrogates or to evoke nostalgic memories, or both) can be interpreted as having been encoded as cultural scripts and narratives at the cultural level, which allow groups of people to share similar experiences. One cannot attribute the enjoyment of sadness fully to any one of these levels, but to the chain of functionalities afforded by each level. We currently do not have enough analytical evidence to assess the validity of the links between the levels, but at least this present account acknowledges the limits of the various explanations with respect to pleasure, and advances a more narrow set of cascading accounts.

5.4. Future directions

Although the evidence itself is not yet convincing – particularly with regard to the actual pleasure induced by sad music – the framework of separate levels and interconnected themes provides a roadmap for future explorations on the topic. The most crucial gaps in our understanding lie in the biological mechanisms and the possible transitions from functional, mood regulatory acts to cultural symbols. At the moment, the biochemical explanations are mere conjectures that rely on a few endocrine markers to index complicated emotional processes, which probably will turn out to be a drastic oversimplification [206]. Unfortunately, most of the evidence associated with the topic at the biological level concerns comparisons (e.g. happy-sad, low-high arousal or stress) that cannot reveal insights into the hedonic shifts involved. Provided that the required techniques become affordable and reliable, probing the biological responses involved in experiences of pleasure associated with sad music may prove to be useful. One recent study by Wassiliwizky and others [115] has provided an example of how one could trace the physiological and experiential aspects of pleasure (chills) and negative affect simultaneously.

On the psycho-social level, it is unclear whether the mood regulation processes – including social surrogacy and emotion sharing – can lead to highly pleasurable experiences at all. It may turn out that while these documented effects are tangible and important positive shifts in mood, they should not be considered as highly pleasurable – at least in the typical situations of functional music use. Finally, we highlighted the possibility that the entire topic of music-induced pleasurable sadness is a highly culturally specific, Western notion, and only meaningful and tractable in a cultural context that puts high value on aesthetic contemplation. This is an open empirical question for cross-cultural study, but existing accounts of contemplative emotions suggest that such notions may not be unique (e.g., Chinese *savouring* of negative emotions, [193]; positive values of suffering in buddhist cultures, [207]).

In conclusion, the paradox of enjoying sad music is not so much a paradox, but an ill-defined problem. By separating the levels of explanation, the types of experiences involved, the plausible yet restricted hedonic shifts, and the competing accounts of how a sad emotion may have rewarding qualities, the enigma finally becomes tractable. However, the real challenge still remains: We do not yet know which of levels and explanations are actually necessary in order to explain these experiences, and whether they are dependent on each other. Furthermore, we remain uncertain regarding the extent to which these explanations are (or are not) specific to music. Causal research designs utilising a wide array of methods and approaches (such as narrative recall studies, mood manipulations, laboratory experiments collecting biological markers of hedonic states, and cross-cultural comparisons, for example) are needed to tease these processes apart. Finally, exposing the pivotal elements involved in the enjoyment of music-related sadness may reveal something fundamental about the awe-inspiring, moving experiences sometimes evoked by nature and social situations [208], and is likely to provide insights into how other forms of art exert their fascinating power on all of us.

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II

MUSIC MAY REDUCE LONELINESS AND ACT AS SOCIAL SURROGATE FOR A FRIEND: EVIDENCE FROM AN EXPERIMENTAL LISTENING STUDY

by

Katharina Schäfer, Suvi Saarikallio, & Tuomas Eerola, under peer review

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III

HOW LISTENING TO MUSIC AND ENGAGEMENT WITH OTHER MEDIA PROVIDE A SENSE OF BELONGING: AN EXPLORATORY STUDY OF SOCIAL SURROGACY

by

Katharina Schäfer & Tuomas Eerola, 2018

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How listening to music and engagement with other media provide a sense of belonging: An exploratory study of social surrogacy

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Abstract

The social surrogacy hypothesis holds that people resort to temporary substitutes, so-called social surrogates, if direct social interaction is not possible. In this exploratory study, we investigate social motives for listening to music in comparison to watching TV and reading fiction. Thirty statements about possible social reasons for the engagement with media were compiled. After 374 participants had rated their agreement with those statements, they were reduced to seven categories: Company, Shared experiences, Understanding others, Reminiscence, Isolation, Group identity, and Culture. The results propose that music is used as temporary substitute for social interaction alongside TV programs and fiction, but that it acts differently. Music listening might act as a social surrogate by evoking memories of relationship partners or through identification processes. There are overlapping motives between the domains, but the elicitation of nostalgia appears to be unique to music listening. The results motivate further investigation into the effects of music listening on socio-emotional well-being.

Keywords

belonging, literary fiction, music listening, parasocial relationships, social surrogacy

The importance of social interaction for health and well-being

As social beings, we have a strong need to belong and feel accepted by and connected to others. Only physiological needs and safety (i.e., food and shelter) exceed the importance of social inclusion (Maslow, 1954). Among the consequences of unmet needs are feelings of social isolation and loneliness (Cacioppo & Patrick, 2011). The impact of social isolation on our

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health is comparable to that of high blood pressure, sedentary lifestyle, obesity, or smoking (House, Landis, & Umberson, 1988).

The ideal way to fulfil social needs is through frequent positive social interactions (Baumeister & Leary, 1995), but there are indirect methods that can at least temporarily satisfy the need for belonging. People resort to these indirect methods when they are momentarily isolated from their sources of social support in a similar way to having a snack when hungry and unable to have a proper meal right away (Gardner, Pickett, & Knowles, 2005). As “social snacks,” some people use symbolic reminders of being connected and accepted such as photos of loved ones, a wedding ring, or a scribbled picture from a child, but seemingly neutral objects may also become successfully associated with real relationship partners, like chicken soup for instance (Troisi & Gabriel, 2011). Those substitutes for direct personal interaction are called social surrogates and a number of media have been proposed to potentially serve this function: beloved books, TV programs, movies, interactive video games, and music (Pinker, 1997). As people are drawn to familiar music, movies, and other media when feeling lonely (Derrick et al., 2009) the engagement with media for social reasons has gained some attention in the past years. So far, it has been shown that the engagement with TV programs and books can provide a sense of belonging (Derrick et al., 2009, Gabriel & Young, 2011). In the following, we will give an overview of the mechanisms of social surrogacy that have been proposed in different domains.

How narratives, TV programs, and symbols act as social surrogates

Preceding research has shown that favorite books (Gabriel & Young, 2011) as well as TV programs (Derrick et al., 2009) can temporarily provide a sense of belonging. However, the authors put forward diverse ways in which different media are thought to replenish feelings of belonging. Gabriel & Young (2011), for instance, propose that readers connect to symbolic groups in other social worlds by identifying themselves with their favorite characters. Through this imaginative process they forget their role as reader and adopt the perspective of a character (Cohen, 2006). By adopting the character’s perspective, they affiliate themselves with the group which the character belongs to, which can temporarily fulfill their need to belong (Gabriel & Young, 2011).

Another social surrogacy tactic was identified in the domain of television research (Derrick et al., 2009). It was observed that viewers get attached to their favorite characters over time. These so-called parasocial relationships with media characters feel psychologically real and meaningful even though people consciously know that they are not real relationships (Gardner et al., 2005). Despite the lack of reciprocity, parasocial interaction seems to enable lonely individuals to feel a sense of belonging (Greenwood & Long, 2009). As non-reciprocal parasocial relationships present little to no threat of rejection, they offer a safe context for feeling connected to others, especially for individuals with low self-esteem or anxious attachment styles (Derrick, Gabriel, & Tippin, 2008).

In addition to symbolic group affiliation and parasocial attachment, a third way of social surrogacy was identified: reminders of real social bonds. Symbolic representations of real relationships are, for instance, family photos, children’s drawings, or souvenirs from holidays that have been demonstrated to replenish feelings of belonging at least temporarily (Gardner, 2001).

Social benefits of music-making

Engagement with music can provide different social benefits. The positive effects of creative musical activities like singing or playing an instrument in a group have been studied relatively

extensively (for an overview see Koelsch, 2013). From empirical investigations we know, for instance, that choral singing enhances the notion of social support and reduces feelings of isolation (Clift, Morrison, Hess, Kreutz, & Stewart, 2010). Playing an instrument can bring people together in a similar way. It has been shown that playing in a group increases social cohesion (Spychiger, Patry, Lauper, & Zimmermann, 1993) and facilitates group work (Harland et al., 2000).

Music listening and social needs

While social benefits of musical group activities have repeatedly been reported, the influence of a much more common activity, music listening, on social needs has been addressed rather scarcely (e.g. Groarke & Hogan, 2016). However, different functions of music listening have been identified previously. Among them are mood regulation, construction and expression of social identities (Zillmann & Gan, 1997), and coping with daily hassles (for an overview see Schäfer, Sedlmeier, Städtler, & Huron, 2013). Most of those functions that address social aspects relate to group listening experiences such as attending a live concert. Listening to music with other people, for instance, induces feelings of togetherness (Batt-Rawden, DeNora, & Ruud, 2005), and enhances group cohesion (Boer & Abubakar, 2014). The social surrogacy hypothesis claims that one can even derive social benefits from listening to music just by oneself. Subsequently, the approach from the perspective of social surrogacy aims at investigating how solitary listening is linked with loneliness. There are hints from empirical research that suggest a relationship between feeling lonely and engaging with familiar tunes. First, listening to preferred melodies is one of the most common activities when feeling lonely (Derrick et al., 2009). Second, reducing loneliness is a major reason for engaging with music among chronic pain sufferers (Mitchell, MacDonald, Knussen, & Serpell, 2007) and older adults (Groarke & Hogan, 2016). Third, adolescents cope with loneliness, for instance, by listening to songs whose lyrics apply to their lives (Lippman & Greenwood, 2012; Zillmann & Gan, 1997). Fourth, lyrics of nostalgic songs have been shown to promote social connectedness, thereby increasing self-esteem and optimism (Cheung et al., 2013).

Despite the evidence for a link between loneliness and listening behavior, this relation has not yet been investigated. Therefore, the aim of this study was to identify the ways in which people turn towards music to satisfy their needs for belonging, inclusion, and intimacy. The main questions that the investigation presented here tries to answer are: Is music used as a temporary substitute for social interaction? If so, is it used in similar ways to TV, movies, or literary fiction? In order to answer these questions, statements about possible social motives for media involvement were compiled and adjusted to three different domains: literary fiction, television and movies, and music. These statements were based on previous research about the functions of music (Schäfer et al., 2013) and social surrogacy (Derrick et al., 2009; Gabriel & Young, 2011; Gardner et al., 2005). After participants rated their agreement with these statements, they were grouped into broader facets of social surrogacy through exploratory factor analyses.

Method

Participants

Participants were recruited through advertisements in social media that sought volunteers from Northern Europe with English as a foreign language to a study about motivation for engaging with different media. They could win a €40 gift voucher as compensation. In total, 374 participants aged between 18 and 62 years completed the survey (see Table 1).

Table 1. Sample characteristics.

| | Total | Male | Female | Test for gender differences |
|----------------|-------------|-------------|-------------|-----------------------------|
| Number | 374 | 159 (43%) | 220 (57%) | – |
| Age in years | 28.2 (7.93) | 28.7 (8.09) | 27.8 (7.79) | $t(367) = 0.98, p = 0.33$ |
| Need to belong | 3.04 (0.62) | 2.83 (0.62) | 3.19 (0.58) | $t(367) = -5.72, p < 0.001$ |

Note: Data are displayed as Number (%) or Mean (SD).

Most of the participants were students (58%), 13% upper-level employees, 8% lower-level employees, 5% self-employed, and 16% had other occupations. Accordingly, the level of education was relatively high. Forty-three percent of the sample had completed higher tertiary, 29% lower tertiary, 17% secondary, 6% doctoral and 1% primary education. Half of the sample (50%) was Nordic. Another 31% percent came from other European countries, and 8% from Non-European Western countries. Most of the participants (64%) were living in Finland at the time of the investigation. About half of the subjects (48%) described themselves as music-loving non-musicians, 21% as amateur musicians, 14% as non-musicians, 9% as serious amateurs, 5% as semi-professional, and 3% as professional musicians.

Materials

To assess social reasons for engaging with different media a questionnaire was designed. First, possible mechanisms through which media could fulfill the need to belong were carved out from previous research in different areas through an extensive literature research. Broad overviews (Cohen, 2006; Gardner et al., 2005) as well as empirical reports from different research domains such as literature, TV, or emotion regulation (Derrick et al., 2008; Mar & Oatley, 2008; Saarikallio & Erkkilä, 2007) built the basis of the thematic analysis. The following three categories were identified: group affiliation, parasocial relationships or virtual company, and representation of a real relationship partner. Several face-valid items representing these categories were compiled and complemented by sentences describing isolation through engagement with media in order to include the opposite of social connection. Additionally, statements related to belonging from a comprehensive study about the functions of music by Schäfer and his colleagues (2013) were added that also served as a model for the format of the statements. The items all began with “I listen to music ...” (“I watch TV/movies ...” or “I read fiction ...,” respectively) and continued, for instance, with “Because it tells me how other people think.” Thirty items in total were generated for music listening (see Table 2).

Second, these items were adjusted to the other two domains (television/movies and literary fiction) in order to create a fitting set of questions for each domain of study. When adapted to watching TV or movies, the incompatible item 28 (see Table 2) was eliminated. When adjusting the remaining 29 items to literary fiction, item 30 (see Table 3) was omitted as it does not apply to reading. The items of the three questionnaires were randomized within the sets of questions.

Psychometric instruments. Attachment style was assessed using the Attachment Scale (Bartholomew & Horowitz, 1991) since it is known to be linked with the strength of parasocial attachment (Cole & Leets, 1999) and it might also influence other forms of social surrogacy. It is a forced-choice instrument in which four styles of attachment (secure, dismissive, preoccupied, and fearful) are described in brief paragraphs. Thirty-four percent of the sample indicated a fearful, 29% a secure, 23% a dismissive, and 14% a preoccupied attachment style.

Table 2. The empirical factor structure and the items for reasons for listening to music.

| Items (I listen to music because ...) | M (SD) | F1 | F2 | F3 | F4 | F5 | F6 | F7 |
|---|-------------|------|------|------|------|------|------|------|
| 6 It keeps me company | 3.60 (1.16) | 0.78 | | | | | | |
| 1 It can make me feel less lonely | 3.27 (1.21) | 0.77 | | | | | | |
| 7 It comforts me when I'm sad | 4.00 (1.08) | 0.70 | | | | | | |
| 5 It reminds me of the people that I used to listen to the music with | 2.85 (1.32) | | 0.74 | | | | | |
| 2 It reminds me of a particular person | 3.07 (1.31) | | 0.73 | | | | | |
| 3 It reminds me of certain periods of my life or past experiences | 3.84 (1.13) | | 0.70 | | | | | |
| 4 It helps me reminisce | 3.47 (1.17) | | 0.54 | | | | | |
| 13 I can recognize myself in the lyrics | 3.27 (1.23) | | | 0.79 | | | | |
| 9 * the songwriter has made similar experiences as I have | 2.78 (1.33) | | | 0.66 | | | | |
| 22 I like to immerse myself into the lyrics | 3.44 (1.23) | | | 0.58 | | | | |
| 8 It makes me feel like somebody else feels the same as I do | 2.98 (1.36) | | | 0.45 | | | | |
| 14 I can identify with the musicians or bands | 2.69 (1.25) | | | 0.40 | | | | |
| 26 I can sing along with it | 3.51 (1.27) | | | 0.33 | | | | |
| 30 I like to have some sound in the background | 3.51 (1.27) | | | | | | | |
| 27 I want to isolate myself from my surroundings | 3.25 (1.28) | | | | 0.74 | | | |
| 28 I don't want to hear the surrounding sounds | 3.05 (1.31) | | | | 0.71 | | | |
| 29 I don't want to talk to anybody | 2.57 (1.35) | | | | 0.59 | | | |
| 24 It helps me understand the world better | 2.75 (1.17) | | | | | 0.83 | | |
| 25 It helps me to understand what is going on in others people's heads | 2.39 (1.17) | | | | | 0.76 | | |
| 11 It makes me feel connected to the world | 2.89 (1.25) | | | | | 0.71 | | |
| 23 It tells me how other people think | 2.41 (1.16) | | | | | 0.71 | | |
| 12 It makes me feel like I belong | 2.75 (1.29) | | | | | 0.36 | | |
| 19 It mirrors the history and culture of my country | 2.14 (1.22) | | | | | | 0.88 | |
| 21 It makes me feel connected to my culture | 2.50 (1.28) | | | | | | 0.68 | |
| 20 It is a good way to express the uniqueness of our culture | 2.59 (1.25) | | | | | | 0.52 | |
| 18 I would like to identify with a particular subculture | 2.11 (1.12) | | | | | | | 0.85 |
| 16 It helps me to show that I belong to a particular social group | 1.95 (1.03) | | | | | | | 0.81 |
| 17 It makes me feel connected to all the people who like the same kind of music | 2.59 (1.23) | | | | | | | 0.62 |
| 15 I would like to take the artists as role models | 1.89 (1.04) | | | | | | | 0.35 |
| 10 It makes me feel connected to others | 2.79 (1.19) | | | | | | | 0.32 |
| <i>Eigenvalue</i> | | 1.99 | 2.30 | 2.35 | 1.55 | 2.93 | 1.70 | 2.25 |
| <i>Variance explained</i> | | 0.07 | 0.08 | 0.08 | 0.05 | 0.10 | 0.06 | 0.08 |

*I have the feeling that the composer or performer or ...

Table 3. The empirical factor structure and the items for reasons for watching TV or movies.

| Items (I watch TV/movies because ...) | M (SD) | F1 | F2 | F3 | F4 | F5 | F6 |
|--|-------------|------|-------|------|------|------|------|
| 1 It can make me feel less lonely | 3.15 (1.30) | 0.76 | | | | | |
| 6 It keeps me company | 3.44 (1.23) | 0.64 | | | | | |
| 7 It comforts me when I'm sad | 3.18 (1.31) | 0.55 | | | | | |
| 23 It tells me how other people think | 3.08 (1.22) | | 0.92 | | | | |
| 25 It helps me to understand what is going on in others people's heads | 2.97 (1.28) | | 0.90 | | | | |
| 24 It helps me understand the world better | 3.33 (1.19) | | 0.83 | | | | |
| 8 It makes me feel like somebody else feels the same as I do | 2.67 (1.27) | | 0.42 | | | | 0.33 |
| 11 It makes me feel connected to the world | 2.83 (1.25) | | 0.41 | | 0.39 | | |
| 14 I can identify with the actors or characters | 3.24 (1.22) | | 0.36 | | | | |
| 9 *the screenwriter or actor has made similar experiences as I have | 2.31 (1.20) | | 0.35 | | | | |
| 29 I like to have some video in the background | 2.15 (1.31) | | -0.32 | | | | |
| 28 I don't want to talk to anybody | 2.20 (1.20) | | | 0.80 | | | |
| 27 I want to isolate myself from my surroundings | 2.60 (1.34) | | | 0.80 | | | |
| 2 It reminds me of a particular person | 1.93 (1.04) | | | | 0.84 | | |
| 3 It reminds me of certain periods of my life or past experiences | 2.57 (1.24) | | | | 0.83 | | |
| 5 It reminds me of the people that I used to watch TV with | 1.82 (1.01) | | | | 0.80 | | |
| 4 It helps me reminisce | 2.52 (1.17) | | | | 0.62 | | |
| 26 I know some lines by heart | 2.40 (1.36) | | | | 0.49 | | |
| 13 I can recognize myself in the plot or dialogues | 2.84 (1.23) | | | | 0.34 | | |
| 19 It mirrors the history and culture of my country | 2.19 (1.21) | | | | | 0.73 | |
| 21 It makes me feel connected to my culture | 2.16 (1.15) | | | | | 0.65 | |
| 20 It is a good way to express the uniqueness of our culture | 2.31 (1.29) | | | | | 0.63 | |
| 16 It helps me to show that I belong to a given social group | 1.76 (0.96) | | | | | | 0.85 |
| 10 It makes me feel connected to others | 2.47 (1.20) | | | | | | 0.76 |
| 17 It makes me feel connected to all people who like the same TV program | 2.47 (1.28) | | | | | | 0.74 |
| 18 I would like to identify with a particular subculture | 2.00 (1.09) | | | | | | 0.65 |
| 12 It makes me feel like I belong | 2.18 (1.12) | | | | | | 0.50 |
| 15 I would like to take the actors or characters as role models | 2.27 (1.22) | | | | | | 0.43 |
| 22 I like to immerse myself into the plot | 3.99 (1.14) | | | | | | |
| <i>Eigenvalue</i> | | 1.87 | 3.36 | 1.49 | 3.12 | 1.79 | 3.26 |
| <i>Variance explained</i> | | 0.06 | 0.12 | 0.05 | 0.11 | 0.06 | 0.11 |

* I have the feeling that ...

Moreover, it has been shown that people with a high need to belong experience more loneliness (Mellor, Stokes, Firth, Hayashi, & Cummins, 2008) and develop stronger parasocial relationships with media figures (Gardner et al., 2005; Greenwood & Long, 2009). In order to control for those interindividual differences, the Need to Belong Scale was applied (Leary, Kelly, Cottrell, & Schreindorfer, 2013). It consists of 10 items that measure the degree of the respondents' desire to be accepted by other people, seek opportunities to belong to social groups, and negative reactions to rejection or ostracism. In our sample, the need to belong varied according to the participants' gender, with women indicating a higher need to belong than men (see Table 1).

Procedure

The survey consisted of two parts. The first part assessed the participants' social reasons for engaging with different media while the second part comprised the instruments of personality assessment described above. In the first part, individuals were presented with the three questionnaires about social reasons for engaging with music, TV, and literary fiction described above. The participants were asked to rate their agreement with each statement on a 5-point Likert scale between *I strongly disagree* (1) and *I strongly agree* (5). The second part of the survey aimed to capture demographics and individual differences in attachment style and the need to belong.

Analysis

Five participants who indicated that they did not understand the questionnaire well but answered nevertheless were discarded. Two more subjects had to be excluded because they answered the same for every question. Further, the answers of all remaining participants ($N = 367$) were correlated with each other in order to discover participants with random answers. Participants obtaining correlations smaller than $r = 0.05$ were discarded ($n = 21$) so that the sample taken to analysis comprised 348 individuals. In order to explore the structure of the statements from the questionnaires, Exploratory Factor Analyses were conducted separately for each domain. This kind of analysis reduces the amount of data by grouping variables together that overlap on the basis of correlations between the participants' ratings.

The same steps were conducted for the analyses of all three questionnaires. First, the factorability of the items was evaluated in terms of sampling adequacy through the Kaiser–Meyer–Olkin (KMO) measure. Second, parallel analysis, which is one of the most robust methods (Zwick & Velicer, 1986), was utilized to find the optimal number of factors to extract. Third, an Exploratory Factor Analysis (EFA) with promax rotation was conducted in all three domains to increase the interpretability of the loadings and allow the comparability between media.

Results

Facets of social surrogacy for listening to music

The KMO measure verified an excellent sampling adequacy ($KMO = 0.90$) and parallel analysis suggested extracting seven factors. The resulting model explained 50% of the variance and obtained a good fit to the data ($RMSR = 0.03$). Table 2 shows the full breakdown of the items and the loadings. The factors were labeled as follows: (a) *Comforting company* (items 1, 6, and 7),

(b) *Reminiscence* (items 2, 3, 4, and 5), (c) *Shared experiences* (items 8, 9, 13, 14, 22, and 26), (d) *Isolation* (items 27, 28, and 29), (e) *Understanding others* (items 11, 12, 23, 24, and 25), (f) *Culture* (items 19, 20, and 21), and (g) *Group identity* (items 10, 15, 16, 17, and 18). The factor structure is illustrated in Figure 1.

In order to investigate the importance of those facets, the mean rating for each factor was computed (see Table 6). *Comforting company*, *Reminiscence*, *Shared experiences* and *Isolation* were the most important aspects of social connectedness for music listening, while *Group identity* and *Culture* did not appear essential. The importance of *Understanding others* was in between these groups of facets.

Facets of social surrogacy for watching TV/movies

The KMO measure of sampling adequacy again yielded excellent factorability (0.91) of the 29 statements. The parallel analysis proposed to extract six factors which explained 51% of the variance and fitted the data ($RMSR = 0.03$, see Table 3). The factors were labeled as follows: (a) *Comforting company* (items 1, 6, and 7), (b) *Understanding others and shared experiences* (items 8, 9, 11, 14, 23, 24, and 25), (c) *Isolation* (items 27 and 28), (d) *Reminiscence* (items 2, 3, 4, 5, 13, and 26), (e) *Culture* (items 19, 20, and 21), and (f) *Group identity* (items 10, 12, 15, 16, 17, and 18).

Comforting company got the highest mean ratings whereas *Isolation* and *Reminiscence* were not deemed to be important (see Table 6). The importance of *Culture* and *Group identity* also seemed rather low. *Understanding others and shared experiences* received values in between the highest and the lower ratings.

Facets of social surrogacy for reading fiction

Again, the KMO measure yielded a positive result (0.93) and the parallel analysis suggested extracting six factors (see Table 4). This model had a very good fit ($RMSR = 0.03$) and explained more than half of the variance (59%) in the data. The factors have been labeled as follows: (a) *Understanding others* (items 11, 23, 24, and 25), (b) *Shared experiences* (items 8, 9, 13, 14, 15, and 22), (c) *Isolating company* (items 1, 6, 7, 27, and 28), (d) *Group identity* (items 10, 12, 16, 17, and 18), (e) *Reminiscence* (items 2, 3, 4, 5, and 26), and (f) *Culture* (items 19, 20 and 21).

The computation of the mean ratings revealed that *Understanding others*, *Shared experiences*, and *Isolating company* were the most important categories of social connectedness for reading fiction (see Table 6). *Reminiscence*, *Group identity*, and *Culture* seemed to be less important facets.

Individual differences

To test for individual differences, the factor scores were submitted to ANCOVAs with age, gender, education (six categories), occupation (seven categories), attachment style (four categories), musical expertise (continuous variable), need to belong (continuous variable), and the amount of media consumption as covariates (results are summarized in Table 5). The amount of media consumption was classified as high or low according to the number of hours of music, TV, or fiction consumption respectively. For this purpose, the sample was divided into halves via median split.

In the musical domain, a higher need to belong was associated with higher factor scores for *Comforting company*, *Reminiscence*, *Shared experiences*, *Understanding others*, *Culture*, and *Group identity*. A higher amount of music consumption was connected with higher scores on the factors *Comforting company*, *Understanding others*, *Culture*, and *Group identity*. Women obtained

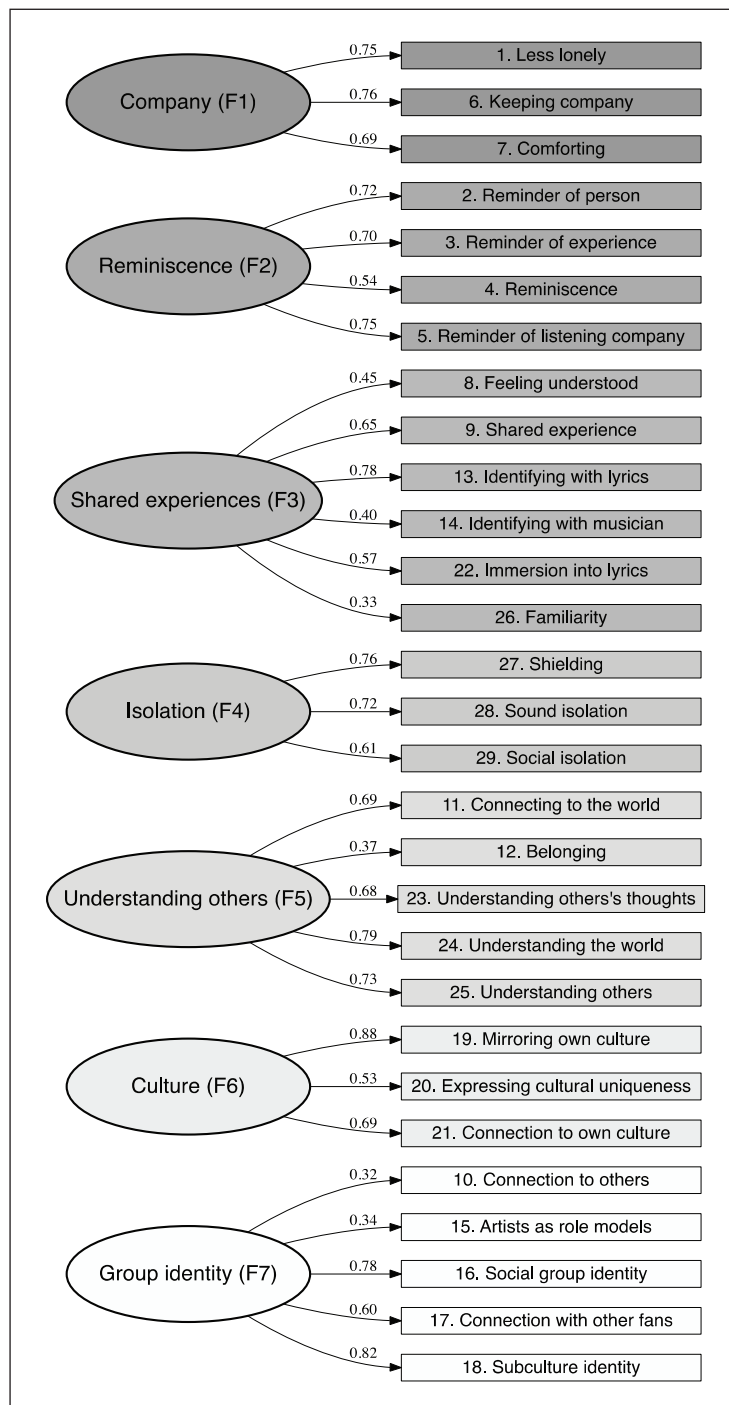


Figure 1. Factor structure for music listening.

Table 4. The empirical factor structure and the items for reasons for reading fiction.

| Items (I read fiction because ...) | M (SD) | F1 | F2 | F3 | F4 | F5 | F6 |
|--|-------------|------|------|------|------|------|------|
| 23 It tells me how other people think | 3.45 (1.34) | 0.90 | | | | | |
| 25 It helps me to understand what is going on in others people's heads | 3.48 (1.31) | 0.85 | | | | | |
| 24 It helps me understand the world better | 3.68 (1.27) | 0.82 | | | | | |
| 11 It makes me feel connected to the world | 2.90 (1.33) | 0.51 | | | | | |
| 13 I can recognize myself in the plot | 2.93 (1.27) | | 0.78 | | | | |
| 14 I can identify with the characters | 3.50 (1.28) | | 0.76 | | | | |
| 9 *the author has made similar experiences | 2.84 (1.33) | | 0.71 | | | | |
| 8 It makes me feel like somebody else feels the same as I do | 2.91 (1.36) | | 0.56 | | | | |
| 15 I would like to take the characters as role models | 2.66 (1.27) | | 0.38 | | | | |
| 22 I like to immerse myself into the plot | 4.21 (1.14) | | 0.36 | | | | |
| 6 It keeps me company | 3.47 (1.32) | | | 0.79 | | | |
| 1 It can make me feel less lonely | 3.15 (1.34) | | | 0.79 | | | |
| 27 I want to isolate myself from my surroundings | 3.12 (1.36) | | | 0.77 | | | |
| 28 I don't want to talk to anybody | 2.59 (1.38) | | | 0.62 | | | |
| 7 It comforts me when I'm sad | 3.12 (1.37) | | | 0.58 | | | |
| 16 It helps me to show that I belong to a given social group | 1.99 (1.08) | | | | 0.92 | | |
| 18 I would like to identify with a particular subculture | 2.01 (1.13) | | | | 0.83 | | |
| 17 It makes me feel connected to all people who like the same book(s) | 2.66 (1.32) | | | | 0.57 | | |
| 10 It makes me feel connected to others | 2.55 (1.21) | | | | 0.54 | | |
| 12 It makes me feel like I belong | 2.51 (1.30) | | | | 0.44 | | |
| 3 It reminds me of certain periods of my life or past experiences | 2.59 (1.27) | | | | | 0.71 | |
| 5 It reminds me of the people that I used to talk about the book with | 2.01 (1.12) | | | | | 0.71 | |
| 2 It reminds me of a particular person | 2.04 (1.13) | | | | | 0.68 | |
| 4 It helps me reminisce | 2.61 (1.22) | | | | | 0.66 | |
| 26 I know the story by heart | 2.24 (1.30) | | | | | 0.47 | |
| 19 It mirrors the history and culture of my country | 2.39 (1.30) | | | | | | 0.83 |
| 21 It makes me feel connected to my culture | 2.39 (1.24) | | | | | | 0.70 |
| 20 It is a good way to express the uniqueness of our culture | 2.66 (1.35) | 3.14 | 3.07 | 2.70 | 2.63 | 2.92 | 1.94 |
| <i>Eigenvalue</i> | | 0.11 | 0.11 | 0.10 | 0.09 | 0.10 | 0.07 |
| <i>Variance explained</i> | | | | | | | |

* I have the feeling that the character or ...

Table 5. Summary of individual differences across the factors (ANCOVA).

| Domain | Covariate | Factors | | | | | | |
|---------------------|-------------------|--------------------|--------------------|--------------------|--------------------|----------------------|--------------------|--------------------|
| | | Company | Reminiscence | Shared experiences | Isolation | Understanding others | Culture | Group identity |
| Music Listening | Age | $F = 8.46^{**}$ | $F = 2.12$ | $F = 8.34^{**}$ | $F = 14.46^{***}$ | $F = 0.86$ | $F = 1.46$ | $F = 1.87$ |
| | Gender | $F = 12.56^{***}$ | $F = 17.43^{***}$ | $F = 12.89^{***}$ | $F = 5.11^*$ | $F = 0.40$ | $F = 5.26^*$ | $F = 0.15$ |
| | Need to belong | $F = 14.79^{***}$ | $F = 31.69^{***}$ | $F = 17.58^{***}$ | $F = 4.17^*$ | $F = 10.97^{**}$ | $F = 0.79$ | $F = 9.09^{**}$ |
| Watching TV/ movies | Music consumption | $F = 13.02^{***}$ | $F = 1.04$ | $F = 3.01^{\circ}$ | $F = 4.88^*$ | $F = 3.79^{\circ}$ | $F = 1.15$ | $F = 3.40^*$ |
| | Musical expertise | $F = 3.23^{**}$ | $F = 2.00$ | $F = 2.97^{\circ}$ | $F = 0.09$ | $F = 9.08^{**}$ | $F = 0.59$ | $F = 3.71^{\circ}$ |
| | Age | $F = 3.20^{\circ}$ | $F = 5.39^*$ | $F = 0.38$ | $F = 11.02^{***}$ | $F = 0.38$ | $F = 1.64$ | $F = 10.25^{**}$ |
| Reading Fiction | Gender | $F = 7.39^{**}$ | $F = 5.82^*$ | $F = 1.84$ | $F = 5.87^*$ | $F = 1.84$ | $F = 3.69^{\circ}$ | $F = 0.15$ |
| | Need to belong | $F = 19.19^{***}$ | $F = 13.07^{***}$ | $F = 6.94^{**}$ | $F = 1.55$ | $F = 6.94^{**}$ | $F = 0.06$ | $F = 16.19^{***}$ |
| | TV consumption | $F = 12.19^{***}$ | $F = 3.55^{\circ}$ | $F = 8.55^{**}$ | $F = 4.56^*$ | $F = 8.55^{**}$ | $F = 0.67$ | $F = 4.89^*$ |
| Fiction | Age | $F = 3.69^{\circ}$ | $F = 3.72^{\circ}$ | $F = 1.68$ | $F = 3.69^{\circ}$ | $F = 5.79^*$ | $F = 1.84$ | $F = 6.96^{**}$ |
| | Gender | $F = 0.00$ | $F = 2.03$ | $F = 0.30$ | $F = 0.00$ | $F = 2.89^{\circ}$ | $F = 0.86$ | $F = 15.30^{***}$ |
| | Need to belong | $F = 17.87^{***}$ | $F = 17.11^{***}$ | $F = 13.09^{***}$ | $F = 17.87^{***}$ | $F = 11.78^{***}$ | $F = 6.89^{**}$ | $F = 15.34^{***}$ |
| Fiction consumption | Age | $F = 7.95^{**}$ | $F = 12.53^{***}$ | $F = 2.22$ | $F = 7.95^{**}$ | $F = 8.30^{**}$ | $F = 0.36$ | $F = 12.71^{***}$ |

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, $^{\circ} p < 0.1$.

Table 6. Comparison of all factors.

| Factor name | Music | TV/movies | Literary fiction |
|---------------------------|---------------|---------------|------------------|
| | <i>M (SD)</i> | <i>M (SD)</i> | <i>M (SD)</i> |
| 1 Company | 3.62 (0.37) | 3.26 (0.16) | 3.09 (0.31) |
| 2 Reminiscence | 3.30 (0.45) | 2.21 (0.39) | 2.30 (0.29) |
| 3 Shared experiences* | 3.11 (0.34) | 2.92 (0.35) | 3.18 (0.58) |
| 4 Isolation** | 2.96 (0.35) | 2.40 (0.28) | 3.09 (0.31) |
| 5 Understanding others*** | 2.66 (0.21) | 2.92 (0.35) | 3.38 (0.33) |
| 6 Culture | 2.41 (0.24) | 2.22 (0.08) | 2.48 (0.16) |
| 7 Group identity | 2.27 (0.40) | 2.27 (0.36) | 2.34 (0.32) |

*contains *Understanding others* in TV/movies and *Identification* in Reading fiction.

**contains *Company* in Literary fiction.

***contains *Shared experiences* in TV/movies.

higher scores than men in the factors *Comforting company*, *Reminiscence*, and *Shared experiences*. A lower age was associated with higher factor scores for *Comforting company*, *Shared experiences*, and *Culture*. Further, participants with more musical expertise yielded higher factor scores for *Comforting company*, *Understanding others*, and *Group identity*.

Regarding the facets of social surrogacy for watching TV and movies, the patterns exhibited by the individual differences across the factors mainly mirror those obtained in the case of music with a few exceptions.

In the domain of literary fiction, the individual factor scores varied in a similar way as in the other two domains. The need to belong influenced all factor scores. Age and amount of fiction consumption showed similar influence in most respects to engaging with TV or music. The chief difference regarded gender that only affected *Group identity* and therefore was less influential in the domain of fiction.

Comparison of the facets of social surrogacy for engaging with music, TV, and literary fiction

Comparing the results of the different domains, striking similarities became apparent (see Figure 2). First, a similar number of factors (seven for music, six for TV and literature) explain a similar amount of variance (~50%) in each domain. Second, the factor *Culture* comprises the same items in all three domains (items 19, 20, and 21). However, connecting to one's own culture does not seem to be as important a facet of social connectedness to media as the other categories (see Table 6).

Regarding the other factors, we found similarities and differences in the items they comprised and in the importance of the facet in the different domains. *Company* was the most important category for listening to music and watching TV. For literary fiction, *Company* was only the third most important factor. The three common items are "It can make me feel less lonely," "It keeps me company," and "It comforts me when I'm sad." Hence, company is associated with comfort in all domains.

Reminiscence was the second most important facet of social connectedness for listening to music but seemed less important in the other two domains. The common items among all three domains were "It reminds me of a particular person," "It reminds me of certain periods of my

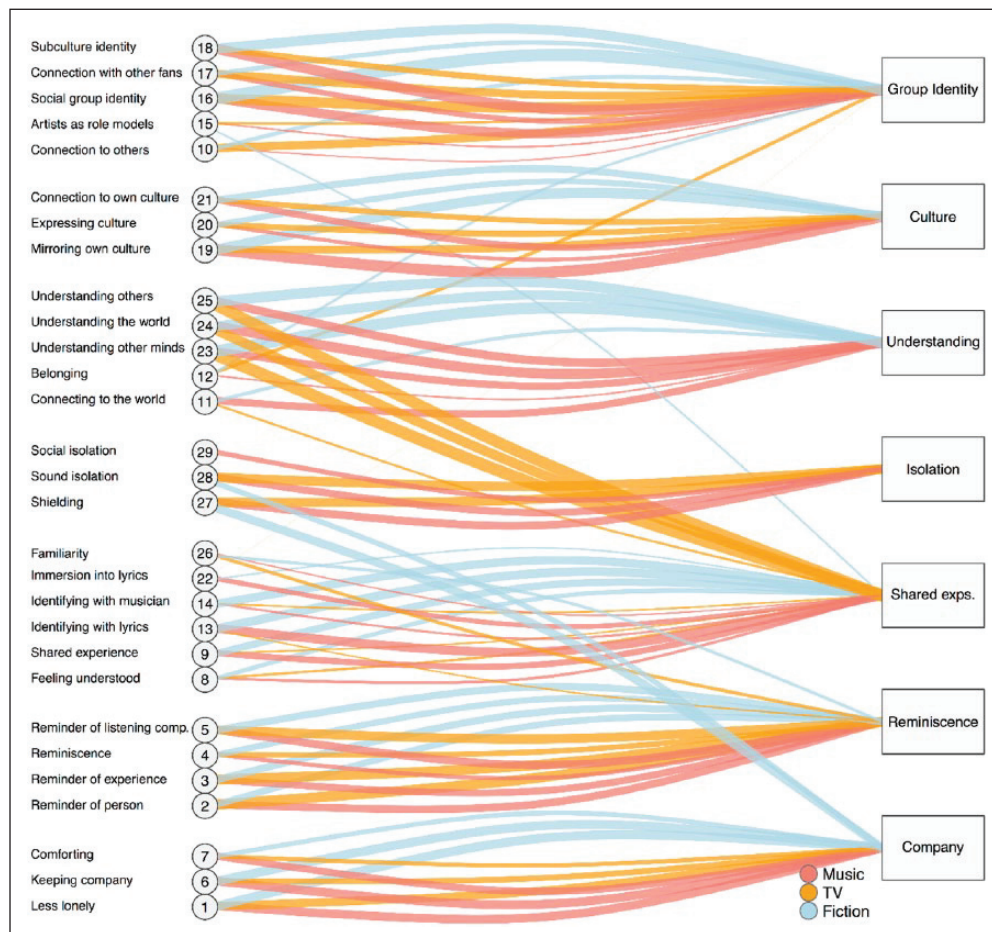


Figure 2. Factor structure for all domains (connection width represents item–factor correlations).

life or past experiences,” “It helps me reminisce,” and “It reminds me of the people that I used to listen to the music/watch TV/talk about the book with.”

Shared experiences was the third most important category for music listening and the second most relevant facet for reading fiction. For watching TV and movies, *Shared experiences* was the second most important category together with items from the factor *Understanding others*. Three items about identification, shared emotions and experiences (items 8, 9, and 14) overlap in all three domains. For music, the lyrics seemed to play an important role, as *Shared experiences* also comprised items 13 and 22 in addition to the three shared ones. The same two items also load on the factor *Shared experiences* in the domain of literary fiction, where “lyrics” was replaced by “plot.”

Isolating oneself was the third most important category of engagement with literature. The shared items were “I want to isolate myself from my surroundings,” and “I don’t want to talk to anybody.” Interestingly, those were combined with the three main items of the factor *Company* (1, 6, and 7) in the literary domain. Literary fiction seems to provide company and isolation from the surroundings at the same time. For music listening, *Isolation* played a minor role and it seemed to be even less important for engaging with TV or movies.

To understand other people's thoughts, feelings, and behavior was the main aspect of social surrogacy for reading literary fiction. Further, *Understanding others* was the second most important facet for watching TV or movies, but it seems less important for music listening.

The facet of *Group identity* that described the connection to a group of fans was not deemed to be important in any domain.

Discussion

The survey about social reasons for engaging with music, TV, and literary fiction aimed to clarify how these media are used as social surrogates. Thirty statements about different facets of social connectedness with media were compiled and adjusted to music, movies, and fiction. The statements can be classified in seven categories: *Company*, *Shared experiences*, *Understanding others*, *Reminiscence*, *Isolation*, *Group identity*, and *Culture*. These facets overlap across the three domains, but there were differences in the importance and content within the seven categories that are discussed in a thematic order.

Company

This factor comprised general statements about seeking company and feeling less lonely for all three media and can therefore be seen as a sort of umbrella category. As this set of items has a prominent position in all three domains (see Table 6), social connection seems to be an important reason for engaging with movies, fiction, and music in general. This finding is in line with research that demonstrates how narratives or TV programs temporarily fulfill belongingness needs (Derrick et al., 2009; Gabriel & Young, 2011). Regarding music, the result fits in with the notion that reducing loneliness is a motive for music listening among adolescents (Lippman & Greenwood, 2012) and older adults (Groarke & Hogan, 2016). This result encourages further study, because it clearly demonstrates for the first time that music actually serves as a social surrogate. Hence, the data suggest a positive answer to the main research question: Yes, music is used as a temporary substitute for social interaction.

Comfort

Additionally, the category *Company* comprised a statement about comfort in all three media. Hence, music, fiction, and TV programs may not only help to cope with loneliness but also offer solace. For music, this comforting function has been previously reported, for instance in the context of emotion regulation (Hanser, Ter Bogt, Van Den Tol, Mark, & Vingerhoets, 2016; Saarikallio & Erkkilä, 2007). Lee, Andrade, and Palmer (2013) have proposed that music might provide comfort by validating negative emotions in a similar way to an empathic friend when it resonates with the emotions of the listener.

Shared experiences

This facet of social surrogacy was also deemed important across all three domains, although it seemed relatively more important for listening to music and reading fiction compared to watching TV (see Table 6). It is composed of statements that can be grouped into two main categories: (a) emotional communion, and (b) identification:

a) Emotional communion: This subcategory describes the aspect of media conveying the notion that someone else feels similar and therefore one is not alone with one's emotions. By

expressing an emotional state an artist or performer shares it with his or her audience. Emotional sharing is something that also happens regularly in relationships, for instance with friends, which might contribute to the notion of media persona as friends (Kanazawa, 2002). Since parasocial relationships with mediated characters can be experienced as friendships, this facet bears a certain similarity to parasocial attachment (see the introduction).

(b) Identification: The statement about identification with musicians, actors, or characters was common to all three domains and complemented by identification with lyrics or a plot in the musical and fictional domain respectively. In literature, identification has been linked with affiliation to a symbolic group, which fulfills the need to belong, at least temporarily (Gabriel & Young, 2011). A similar mechanism has been proposed in TV research, where identification with a character leads to emotional absorption that provides an opportunity for social connection with the characters of the narrative (Greenwood & Long, 2009). It is conceivable that music provides a similar opportunity for affiliation through identification and that lyrics serve as a sort of narrative through which listeners identify themselves with the artist (Scherer & Zentner, 2001).

Understanding others

This category represents the most important social facet for reading fiction, but also plays a major role in watching TV (see Table 6). The common statements include the understanding of other people's thoughts and behaviors. Hence, literary fiction or movies provide insights into the motives and feelings of other people. This finding is in line with previous research showing that reading literary fiction in comparison to non-fiction augments one's ability to detect and understand others' emotional reactions (Kidd & Castano, 2013). Furthermore, reading fiction is associated with a better understanding of others' mental states and a higher level of empathy (Mumper & Gerrig, 2017).

Reminiscence

This category contains statements that describe media as reminders of certain people or events that one associates with a specific media experience. *Reminiscence* was mentioned as the second most important facet of social connectedness through music but it did not seem essential in the other two domains (see Table 6). This follows previous research stating that musically supported reminiscence is vital for the well-being of adults of all ages (Groarke & Hogan, 2016). Those reflective processes supported by music are important, because they are conducive to the construction of self-identity (Saarikallio, 2010) and convey a sense of belonging by bringing back memories of significant others (DeNora, 1999; Groarke & Hogan, 2016). Besides that, remembering foregone times often brings back nostalgic feelings, a process Juslin and Västfjäll (2008) referred to as "episodic memory." Therefore, *Reminiscence* is strongly associated with music's ability to evoke nostalgia (Barrett et al., 2010) that can render knowledge about positive social relations accessible (Wildschut, Sedikides, Arndt, & Routledge, 2006) which in turn can replenish feelings of belonging (Twenge et al., 2007). This possible mechanism for social surrogacy through music fits in well with previous research showing that nostalgia can strengthen social connectedness (Wildschut, Sedikides, Routledge, Arndt, & Cordaro, 2010) and increases perceived social support (Zhou, Sedikides, Wildschut, & Gao, 2008). Hence, inducing nostalgia through music listening is another means of achieving social connectedness. With its clear retrospective focus, this category is similar to social surrogacy through symbolic representations of real social bonds described in the introduction to this article (Gardner et al., 2005).

Isolation, culture, and group identity

Three categories that were not deemed particularly important overall were *Isolation*, *Culture*, and *Group identity*. *Isolation* was mentioned as the third most important facet of reading fiction and watching movies. In the musical domain, it constituted the fourth most important facet (see Table 6). While watching TV or listening to music, one is shielded from one's surroundings in a way that stimuli from the environment can be ignored more easily (Skånland, 2013). If music, movies, or audiobooks are consumed in public via headphones they allow to be masked and create a sort of private space in close proximity to strangers (Sloboda, Lamont, & Greasley, 2009). In the domain of literary fiction, the statements of *Isolation* and *Company* merged into one category. This combination might seem paradoxical at first sight, but makes sense in practice. It is well imaginable that readers immerse themselves in a story in order to separate themselves from the current situation and connects to the character(s) of the narrative at the same time. Hence, books seem to attract readers because they allow one to isolate oneself from one's surroundings and provide company at the same time.

The factor *Culture* refers to one's connection with one's own culture that artefacts such as music, movies, or books might offer their audiences. It did not seem important in our survey, though, as *Culture* and *Group identity* got the lowest ratings in all three domains.

The statements that we subsumed under *Group identity* describe identification with a subculture, belonging to a group of fans, and having an artist as a role model. This aspect of music listening can also support identity formation (DeNora, 1999). However, as it did not seem to be particularly important to our sample for any of the studied domains, it will not be discussed further here.

Individual differences

Almost all the categories in all three domains were influenced by individual differences in the need to belong (see Table 5 for details). Participants with a greater desire for social connection obtained higher scores meaning that they are more likely to use all three kinds of media to satisfy their social needs. This result corresponds with our expectations and corroborates the relation of the extracted factors with social needs. Furthermore, this finding is in line with previous research documenting a positive correlation between the need to belong and symbolic social behaviors (Gardner et al., 2005).

Gender influenced the ratings in the way that women yielded higher scores in many categories on average. This effect might be partly explainable by the observed gender difference in affiliative tendencies where women reported a stronger need to belong than men (see Table 1). This could be related to the notion that women are more relationally oriented than men, who put emphasis on larger spheres of social relationships (see Baumeister & Sommer, 1997; Gabriel & Gardner, 1999).

Regarding the average amount of hours that participants spent listening to music, watching TV, or reading fiction, more media consumption was associated with higher individual factor scores in most of the categories. This means that people who spend more time engaging with media in general also use them more often to satisfy their need for connection or intimacy. This is in line with the observation that chronically lonely individuals are more likely to use media than people whose social needs are satisfied (Perse & Rubin, 1990). As the analysis is based on the data from one pool of participants, all individual differences could reflect the diversity within the sample in question.

Limitations

As is true of every self-report study, this investigation is limited by the introspective and reflective abilities of the participants. We asked people about their motivation to engage with different media, but we are aware that the reasons for choosing a certain medium are not always conscious. Nevertheless, there is a good chance that people become aware of their motivation when asked for it in a direct way. One way to mitigate these potential issues would be to approach the topic via experience sampling method. Further, the generalizability of the results is limited by the sampling method. For instance, in the present sample the securely attached are underrepresented while the anxiously attached are overrepresented compared to a representative sample (Mickelson, Kessler, & Shaver, 1997). This distribution is not surprising given that anxiously attached individuals tend to develop relatively strong parasocial relationships with media characters (Cole & Leets, 1999) and therefore might have been more attracted by the topic of the survey. Furthermore, a convenience sample such as the one obtained in this study recruited over social media and the internet has other drawbacks, such as being more highly educated than the general population, being interested in technology, and being drawn from a particularly constrained pool of nationalities (Chandler & Shapiro, 2016).

Conclusions and future studies

To summarize the results, seeking company and comfort as well as shared experiences were the most important social categories of engagement with media in all three domains. Getting a better understanding of other people and social conventions was identified as a major social facet of reading fiction and watching TV or movies. Further, being reminded of certain people or periods of one's life was an essential facet of social connection through music, but not TV or fiction. Participants also reported the isolating effect as an important aspect of engaging with media of any of the three domains. The other categories played a minor role.

As mechanisms through which music might be able to temporarily satisfy the need for social connection or intimacy, the data propose the identification with a musician and the elicitation of nostalgia. Furthermore, there are hints in the data that music might provide social support by resonating with the listener's experiences or emotions.

Regarding TV and movies, our data fit in with the previously reported means of social surrogacy, for example through attachment or identification with a media character (Derrick et al., 2009; Greenwood & Long, 2009). In the domain of literary fiction, social surrogacy through identification with a character as proposed previously (Gabriel & Young, 2011) played a major role. In general, there are some links to existing frameworks, such as emotion induction mechanisms (Juslin & Västfjäll, 2008), concerning reminiscence and episodic memories. Further, mood regulation is addressed in terms of solace (Saarikallio & Erkkilä, 2007). We also link the findings with previously reported functions of music listening such as constructing social identity (DeNora, 1999) or alleviating loneliness (Groarke & Hogan, 2016).

This broad investigation was designed to explore if and how music might be used as temporary substitute for social interaction. At the same time, we obtained an overview of the possible ways in which TV programs, music, and literary fiction provide a sense of belonging. Expanding and consolidating the findings obtained with these sets of questions using a sample constructed in another fashion would allow confirming the observed similarities and differences. However, perhaps the most obvious way to move forward is to design experiments to investigate these identified facets of social surrogacy. To date, there have been few empirical studies in the domain of literary fiction and TV, but social surrogacy through music has not yet been explored at all. As

our results suggest that solitary music listening is used to temporarily satisfy social needs, it should be included in the investigation of underlying surrogacy mechanisms. Since various aspects of social connectedness were assigned different degrees of importance for the three media, one would expect that people use particular media for specific aspects of social support. Music, for instance, seems to be particularly powerful in evoking nostalgic memories. Hence, when people want to connect with a specific person through memories they might turn to musical devices rather than TV or books, which might be favored when connection with the characters of a specific story world is wanted. The empirical testing of those conclusions is yet to come.

Further, it is not very well understood how this engagement with media for social reasons affects our well-being. Previous research on the relationship between loneliness and media usage paints a rather unclear picture (Davis & Kraus, 1989; Greenwood & Long, 2009). There is evidence for a compensatory as well as for a complementary use of TV watching, for instance (Greenwood & Long, 2009). So, whether the use of media as social surrogates is healthy or not is still under debate. Relationships with virtual characters certainly cannot completely replace social interaction in real life, but they might be able to serve certain psychological functions such as emotion validation. Therefore, future research should systematically investigate under which circumstances what kind of media are beneficial for whom.

Although the use of music in promoting well-being has become an increasingly popular topic (e.g. MacDonald, Kreutz, & Mitchell, 2012; Perkins & Williamson, 2013), the majority of the work on music and well-being focuses on active music-making and the role of the most common means of engaging with music, namely, listening, has been rarely investigated (Laukka, 2007). The observations from the current study encourage further research in this direction, since listening to music may – at least temporarily – provide us with a sense of belonging and intimacy that we, as social beings, need to thrive in this world.

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