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Abstract

The present study investigated the influence of awareness of age-related change (AARC) in the domain interpersonal relations on the perception of social approach and avoidance motivation and social resources. Awareness of age-related change is a theoretical approach to views on aging and focuses on the subjective evaluation of aging. The concept differentiates between age-related gains and losses, which can be seen as indicators of the subjective perception of resources. Studies show that resources are crucial for social approach and avoidance motivation. The presence of goal-relevant resources predicts the pursuit of approach goals, whereas the absence predicts the pursuit of avoidance goals. Following this argumentation it is expected that age-related gains are correlated with social approach motivation, situational social approach motivation and the presence of social resources, whereas age-related losses are correlated with social avoidance motivation, situational social avoidance motivation and the absence of social resources. Age-related gains and losses and social approach and avoidance motivation were assessed using an online questionnaire. Situational social approach and avoidance motivation and situational social resources were assessed using the experience sampling method (ESM). Ninety participants (Sample 1) (M age = 52.81) filled in the online questionnaire and sixty of them (Sample 2) (M age = 51.75) also participated in the ESM part. In the ESM part participants were asked to characterize their current emotional state and situation 6 times per day using a mobile app for one week. Linear regression analysis (Sample 1) and multilevel analysis (Sample 2) showed that age-related gains in the domain interpersonal relations were associated with more social approach motivation and situational social approach motivation. The perception of social resources predicted more situational social approach motivation. The study confirmed the assumption that age-related gains and social resources play a role in social approach motivation.

Keywords: Awareness of age-related change, age-related gains and losses, social approach and avoidance motivation, social resources, experience sampling method

Abstract

Die vorliegende Studie untersuchte den Einfluss altersbezogenen Gewinnen und Verlusten im Bereich interpersonaler Beziehungen auf soziale Annäherungs- und Vermeidungsmotivation und soziale Ressourcen. Altersbezogene Gewinne und Verluste beziehen sich auf die subjektive Bewertung des Älterwerdens und können als Indikatoren für die subjektive Wahrnehmung von Ressourcen herangezogen werden. Studien zeigen, dass das Vorhandensein von Ressourcen mit der Verfolgung von Annäherungszielen und ein Fehlen von Ressourcen mit Vermeidungszielen im Zusammenhang steht. Es wird daher erwartet, dass altersbezogene Gewinne mit sozialer Annäherungsmotivation, situativer sozialer Annäherungsmotivation und dem Vorhandensein sozialer Ressourcen zusammenhängt, während altersbezogene Verluste mit sozialer Vermeidungsmotivation, situativer sozialer Vermeidungsmotivation und dem Fehlen sozialer Ressourcen zusammenhängt. Für die Datenerhebung wurden ein Online-Fragebogen und die Experience Sampling Methode (ESM) herangezogen. Neunzig Teilnehmende (Stichprobe 1) (M Alter = 52.81) füllten den Online-Fragebogen aus und sechzig davon (Stichprobe 2) (M age = 51.75) nahmen auch bei der ESM-Erhebung teil. Dafür wurden die Teilnehmenden gebeten sechsmal täglich für die Dauer von einer Woche ihre aktuelle Situation und Gefühlslage mittels einer mobilen App zu dokumentieren. Lineare Regressionsanalysen (Stichprobe 1) und Mehrebenenanalysen (Stichprobe 2) zeigten, dass altersbezogene Gewinne im Bereich zwischenmenschlicher Beziehungen mit mehr sozialer Annäherungsmotivation und situationaler sozialer Annäherungsmotivation im Zusammenhang steht. Die Wahrnehmung sozialer Ressourcen sagte eine höhere situative soziale Annäherungsmotivation vorher. Die Studie bestätigt die Annahme, dass altersbezogene Gewinne und soziale Ressourcen eine Rolle bei der sozialen Annäherungsmotivation spielen.

Schlüsselwörter: Altersbezogene Gewinne und Verluste, soziale Annäherungs- und Vermeidungsmotivation, soziale Ressourcen, Experience Sampling Methode

Introduction

Establishing and maintaining positive social relationships is one of the fundamental human needs. In this context people can seek positive outcomes in their relationships (such as love and acceptance; *social approach motivation*), but people can also avoid negative outcomes (such as rejection and conflict; *social avoidance motivation*) (Gable, 2006). Social approach and avoidance motivation are associated with different outcomes. In general, social approach motivation is associated with positive social outcomes and high levels of well-being, whereas social avoidance motivation is associated with negative social outcomes and low levels of well-being (Nikitin & Schoch, 2021). Relatively little is known about the development of social approach and avoidance motivation across adulthood. First studies indicate that (some) older adults might be more avoidance motivated and less approach motivated than younger adults (Nikitin & Freund, 2019; Nikitin et al., 2014). Given the positive effects of approach and negative effect of avoidance motivation, it is important to learn more about reasons for older adults' lower levels of approach and higher levels of avoidance motivation. In the present study, it is hypothesized that one factor that might reduce older adults' approach and enhance their avoidance motivation are negative views on aging. The term *views on aging* subsumes attitudes, expectations, perceptions and stereotypes that are linked to old age, the aging process and older people (Kornadt & Rothermund, 2011). The way we think about aging and old age affects our experience and behavior, both positively (Menkin et al., 2017; Schwartz et al., 2020; Wurm et al., 2010) and negatively (Bouazzaoui et al., 2020; Kite et al., 2005; Meisner, 2012; Pikhartova et al., 2016). One prominent concept in the aging literature is *awareness of age-related change* (AARC, Diehl & Wahl, 2010). This concept argues that aging can be perceived as being developmentally beneficial (indicating *age-related gains*) or developmentally limiting (indicating *age-related losses*). Age-related gains and losses are experienced in different life domains (e.g., health and physical functioning, cognitive functioning, interpersonal relations) and affect peoples' behavior,

experiences, motivation, and goals (Diehl & Wahl, 2010; Kaspar et al., 2019; Neupert and Bellingtier, 2017; Sabatini, 2020; Wahl et al., 2013). Dutt et al. (2018) argue that age-related gains and losses can be seen as indicators of the subjective perception of resources. Age-related gains indicate the presence of resources, whereas age-related losses indicate the absence of resources. Resources, in turn, are crucial for approach and avoidance motivation: the presence of goal-relevant resources predicts the pursuit of approach goals, whereas the absence of goal-relevant resources predicts the pursuit of avoidance goals (Bromberg, 2018; Schnelle et al., 2010). Built on this logic it is argued that age-related gains and losses are connected to social approach and avoidance motivation, respectively. There is already some empirical evidence that social approach and avoidance motivation are related to views on aging. Negative views on aging are associated with less social approach and more social avoidance motivation in older workers (Rahn et al., 2021); and the experience of negative and positive *age meta-stereotypes* correlates with avoidance and social engagement in daily life, respectively (Finkelstein et al., 2020). A *meta-stereotype* describes the way members of one group think members of another group perceive them. It is a stereotype about a stereotype (Vorauer et al., 1998). It is less clear, however, whether these effects are driven by age-related gains and losses and the associated different perception of resources. That leads to a certain relevance to find out more about the effects of age-related change on social approach and avoidance motivation and the role of social resources. This is the first study to investigate these connections. Different methods for data collection provide a broad insight into the effects of age-related gains and losses. Online questionnaires deliver information about the relation between age-related gains and losses and social approach and avoidance motivation as trait variables. Using the experience sampling method daily experiences can be captured directly at the moment. That makes it possible to find out more about the effects of age-related gains and losses on social approach and avoidance motivation and the perception of social resources as state variables.

Theoretical background

Social approach and avoidance motivation

Approach and *avoidance* are central driving forces of human behavior. Approach means turning toward something positive and aims to achieve a pleasant outcome, whereas avoidance means turning away from something negative and aims to avoid an unpleasant outcome. The focus on positive outcomes in approach motivation leads to a more sensitive perception of goal progress and opportunities to promote an aspired goal. People experience feelings of self-determination and competence in consequence. The confrontation with possible threatening consequences in avoidance motivation leads to negative emotions such as fear and tension, which in turn reduces the pleasure in pursuing the goal. Thus, approach and avoidance motivation result in different consequences. Approach motivation is related to positive outcomes (e.g., stronger sense of self-determination and competence), whereas avoidance motivation is connected with negative outcomes (e.g., lower subjective well-being, less satisfaction, physical complaints and impaired performance) (Brandstätter et al., 2018). Approach and avoidance motivation also occur in the social context, called social approach and social avoidance motivation. Social approach motivation involves pursuing a positive social outcome such as intimacy and acceptance, whereas social avoidance motivation involves avoiding a negative social outcome such as rejection or conflict. Social approach and avoidance motivation imply *social goals* and *social motives*. Motives describe stable behavioral dispositions (trait), whereas goals describe situational conditions and refer to an individual's temporarily directed energy (state) (Gable, 2006). However, motives and goals are interrelated. Individuals with strong social approach motives pursue more social approach goals. Social avoidance motives correlate with the pursuit of social avoidance goals (Gable, 2015). Social approach motivation is related to positive social outcomes, whereas social avoidance motivation is correlated with negative social outcomes. Social approach motivation is connected with more relationship satisfaction, well-being and less loneliness (Gable, 2006).

Individuals with more social approach motivation report less conflict in their romantic relationships and perceive their partners as more supportive (Kuster et al., 2017). Moreover, they experience more positive events compared to individuals with more social avoidance motivation. Social avoidance motivation is in contrast associated with more loneliness and less relationship satisfaction. Although individuals with more social avoidance motivation do not experience more negative events, they react stronger to them (Gable, 2006). Social avoidance motivation in romantic relationships is correlated with more conflict and the partners are perceived as less supportive (Kuster et al., 2017).

Social approach and avoidance motivation and resources

The availability of resources influences whether approach or avoidance goals are pursued. Hobfoll (1989) defines resources “as those objects, personal characteristics, conditions, or energies that are valued by the individual or that serve as a means for attainment of these objects, personal characteristics, conditions, or energies“ (p. 516). Resources imply social, personal, object and condition resources (Wells et al., 1999). Studies show that the presence of goal-relevant resources predicts more approach goals and the absence of goal-relevant resources predicts more avoidance goals (Schnelle et al., 2010; Bromberg, 2018). These connections are evident in the achievement context as well as in the social context. Schnelle et al. (2010) examined the relationship between goal-relevant resources and motivation in the achievement context. Students who reported having plenty of resources relevant to their university studies pursued more approach goals than students who reported having few resources (Schnelle et al., 2010). Similar findings are shown in the social context. In an experimental study, goal-relevant resources (social competence and social support) of the participants were manipulated. Individuals in the experimental group with many resources reported more social approach goals (Bromberg, 2018).

Social approach and avoidance motivation and chronological age

Relatively little is known about the development of social approach and avoidance motivation across adulthood. Lindenberg and Ormel (1998) describe aging as a process of changing gains and losses in resources. The balance between gains and losses becomes more negative with increasing age due to less resources resulting in changes in the pursuit of goals. The authors conclude that younger adults are more growth oriented as they have more resources. Whereas older adults increasing losses in resources results in an orientation to loss avoidance (Lindenberg & Ormel, 1998). Ebner et al. (2006) confirmed these assumptions and found evidence for a motivational shift during the life span. In their studies, older adults were more orientated toward maintenance and avoidance of losses and less growth orientated (Ebner et al., 2006). Studies also indicate that younger and older adults differ in their social approach and avoidance motivation. In a correlational study, older adults were more avoidance motivated than younger adults, but the two groups did not differ in their approach motivation. Younger adults reported more approach- than avoidance motivation, whereas approach and avoidance motivation seemed to be more balanced in older adults (Nikitin et al., 2014). Another study examined the role of relationship closeness in this context. Older adults showed more social avoidance motivation in peripheral (but not close) relationships compared to people in middle and younger age (Nikitin & Freund, 2019).

Views on aging

The increasing perception of losses in resources in older age (Lindenberg & Ormel, 1998) and an associated motivational shift during life span (Ebner et al., 2006) illustrates that aging is not a neutral process. The life phase of old age is attended by certain ideas and attitudes, which can be subsumed as views on aging. They imply age stereotypes, expectations and attitudes towards aging, the process of growing older and the group of older people, as well as the perception of one's own age. Views of aging can be positive as well as negative and refer to different domains. It is a multidirectional and multidimensional construct.

For example, Kornadt and Rothermund (2011) describe eight distinct life domains: *family and partnership, friends and acquaintances, religion and spirituality, leisure and engagement, personality and lifestyle, finances and money management, work and occupation* as well as *fitness and health*. These domains are independent of each other and differ in terms of their evaluation. The way we think about the life phase of old age influences our experience and behavior (Kornadt & Rothermund, 2011). Studies show that negative views on aging are connected with poorer cognitive performance (Bouazzaoui et al., 2020), less life satisfaction and more perceived loneliness (Pikhartova et al., 2016). In contrast, positive views on aging have a positive impact on social engagement (Schwartz et al., 2020), are associated with establishing more new friendships (Menkin et al. 2017) and more physical activity (Wurm et al., 2010). However, negative views on aging are more prevalent (Kite et al., 2005) and have a stronger influence than positive views on aging (Meisner, 2012). It is also indicated that views on aging unfold their strongest influence in those life domains to which they refer (Kornadt and Rothermund, 2015; Levy & Leifheit-Limson, 2009; Voss et al., 2017). The phenomenon that age stereotypes in a certain domain have stronger impact if the content and outcome domain correspond is called *stereotype-matching effect* (Levy & Leifheit-Limson, 2009). In an experimental study age stereotypes in the cognitive and physical domain showed greater effect when the stereotype content and outcome domain matched. Confronting older adults with positive age stereotypes in the cognitive domain (e.g., sage) resulted in a better performance on memory tasks (outcome domain), whereas negative age stereotypes in the cognitive domain (e.g., dementia) led to a worse performance on memory tasks. Confronting older adults with positive age stereotypes in the physical domain (e.g., fit) resulted in a better performance on a balance task (outcome domain), whereas negative age stereotypes in the physical domain (e.g., feeble) led to a worse performance on a balance task (Levy & Leifheit-Limson, 2009). A longitudinal study supports these domain-specific influences of views on aging. Negative views on aging in the domain personal competence, physical loss and social

loss predicted increased perceived discrimination in the domains work, medical care and social interactions three years later (Voss et al., 2017). Kornadt and Rothermund (2015) conclude that the consideration of a domain-specific perspective contributes to a better value in the prediction of behaviors of older individuals.

Studies indicate that views on aging influence social approach and avoidance motivation. Positive views on aging are associated with social approach motivation, whereas negative views on aging are associated with social avoidance motivation. In a study in the work context internalized negative age stereotypes were connected with less social approach motivation and more social avoidance motivation in older workers. The negative relationship between age stereotypes and social approach motivation was mediated by sense of belonging with the workplace (Rahn et al., 2021). Finkelstein et al. (2020) investigated the experience of negative and positive age meta-stereotypes about older people. A meta-stereotype is the attitude of members of one group (ingroup) about the way they think they are stereotypically perceived by members of another group (outgroup). It is a stereotype about a stereotype (Vorauer et al., 1998). Positive and negative age meta-stereotypes can lead to different reactions and behaviors. Reactions include challenge, threat, and/or boost. These reactions in turn lead to behaviors. Behaviors include conflict, avoidance, and engagement (Finkelstein et al., 2015). Daily perceptions of negative age meta-stereotypes about older people were found to be correlated with avoidance (e.g., avoiding interactions with other people at work), whereas positive age meta-stereotypes about older people were related to social engagement in the workplace (e.g., engaging in meaningful interactions with other people at work) (Finkelstein et al., 2020).

Awareness of age-related change (AARC)

One prominent theoretical approach to views on aging is awareness of age-related change (AARC, Diehl & Wahl, 2010). There is a focus on the subjective perception of aging and the evaluation of this process. This concept argues that aging can be perceived as being

developmentally beneficial (indicating *age-related gains*) or developmentally limiting (indicating *age-related losses*). Age-related gains and losses refer to different life domains. Diehl and Wahl (2010) postulate five dimensions: *health and physical functioning, cognitive functioning, interpersonal relations, social-cognitive and social-emotional functioning, and lifestyle and engagement*. Wahl et al. (2013) showed in their study that participants reported more age-related gains than losses. Both variables were correlated with chronological age, with a stronger connection between age and age-related losses. That demonstrates that there is a greater increase of age-related losses with growing older (Wahl et al., 2013).

Age-related gains and losses affect a person's behavior, experiences, motivation and goals (Diehl & Wahl, 2010). Age-related gains are related to more emotional well-being (Sabatini, 2020), general life satisfaction, satisfaction with aging, and a more positive view of the future (Wahl et al., 2013). On the contrary age-related losses are related to less emotional and physical well-being (Sabatini et al., 2020), less overall life satisfaction, less satisfaction with aging, a more negative view of the future (Wahl et al., 2013), more negative affect (Neupert & Bellinger, 2017), and more depressive symptoms (Kaspar et al., 2019). Wilton-Harding and Windsor (2021) examined the relationship between age-related gains and losses and well-being. Psychological well-being in this study consisted of the psychological needs (satisfaction and frustration of autonomy, competence, and relatedness), vitality and life engagement. Individuals with higher levels of age-related gains and lower levels of age-related losses reported more psychological well-being. Lower levels of age-related gains and higher levels of age-related losses in contrast were associated with lower psychological well-being. The satisfaction of the psychological needs was associated with age-related gains, whereas the frustration of the psychological needs was associated with age-related losses (Wilton-Harding & Windsor, 2021). There is also evidence that awareness of age-related gains and losses change over the day. A diary study showed strong individual fluctuation in awareness of age-related gains and losses. Despite these fluctuations, individuals with a

negative view on aging reported more age-related losses and less age-related gains compared to individuals with a positive view on aging. Individuals with a more positive view on aging reported more age-related gains. The authors suggest that views on aging may influence the perception in everyday life. Individuals with negative views on aging may focus more on negative aspects in their life and thus perceive more losses (Neupert & Bellinger, 2017). As age-related gains are associated with several positive outcomes (Sabatini, 2020; Wahl et al., 2013), age-related gains can be seen as a resource. Dutt et al. (2018) also argue that age-related changes can be considered as a measure of subjectively perceived resources. Age-related gains represent the presence of resources, whereas age-related losses represent the absence of resources.

Research aims and hypotheses

Former studies show that resources are crucial for approach and avoidance motivation: the presence of goal-relevant resources predicts the pursuit of approach goals, whereas the absence of goal-relevant resources predicts the pursuit of avoidance goals (Schnelle et al., 2010; Bromberg, 2018). In this study social approach and avoidance motivation are investigated as state and trait variables. Social approach and avoidance motivation as a trait is something that is part of an individual's personality and therefore a long term characteristic of a person. Social approach and avoidance motivation as a state is a temporary condition that individuals experience for a short period of time and is therefore labeled as *situational social approach* and *situational social avoidance motivation*. The concept awareness of age-related change (AARC, Diehl & Wahl, 2010) can be considered as an indicator of the subjective perception of resources. Age-related gains represent the presence of resources, whereas age-related losses represent the absence of resources (Dutt et al., 2018). Built on this logic it is argued that age-related gains and losses are connected to social approach and avoidance motivation and the perception of social resources. It is hypothesized that individuals who perceive more age-related gains report more social approach motivation (trait), situational

social approach motivation (state) and situational social resources. Individuals who perceive more age-related losses are expected to report more social avoidance motivation (trait), situational social avoidance motivation (state) and less situational social resources. It is further expected that the amount of situational social resources is positively associated with situational social approach and negatively associated with situational social avoidance motivation in social situations. Taking into account that there is a stronger effect on the outcome if there is a match between the outcome domain and content domain (Levy & Leifheit-Limson, 2009), the present study focuses on age-related gains and losses in the domain interpersonal relations.

No empirical research has investigated the relationship between age-related gains and losses and social approach and avoidance motivation yet. The goal of the study is to close this research gap. The findings will inform about the connection between age-related gains and losses and social approach and avoidance motivation and the role of social resources in this context. This leads to the following hypotheses:

H1: Age-related gains in the domain interpersonal relations are related to social approach motivation.

H2: Age-related losses in the domain interpersonal relations are related to social avoidance motivation.

H3: Individuals who perceive more age-related gains in the domain interpersonal relations report more social approach motivation in social situations.

H4: The amount of situational social resources is positively associated with situational social approach motivation in social situations.

H5: Individuals who perceive more age-related losses in the domain interpersonal relations report more situational social avoidance motivation in social situations.

H6: The amount of situational social resources is negatively associated with situational social avoidance motivation in social situations.

H7: Individuals who perceive more age-related gains in the domain interpersonal relations report more situational social resources in social situations.

H8: Individuals who perceive more age-related losses in the domain interpersonal relations report less situational social resources in social situations.

Materials and methods

Study design

For data collection online questionnaires and the *experience sampling method (ESM)* were used. Online questionnaires were administered using the software *SoSci-Survey* and ESM data was assessed using the mobile app *ESM Quest* (Steiner, 2021). The ESM systematically investigates everyday life experiences of participants. Therefore the participants are asked to describe their current condition and situation several times a day over a certain period. In the present study the participants were asked to complete a short questionnaire six times a day for one week. The advantage of this method is that experiences are assessed directly at the moment, which results in less biases compared to retrospective survey methods. Data collection of the ESM took one week. Demographic data, age-related gains and losses and social approach and avoidance motivation were assessed with the online questionnaire (see Appendix A). Situational social approach and avoidance motivation and situational social resources were assessed with the app (see Appendix B).

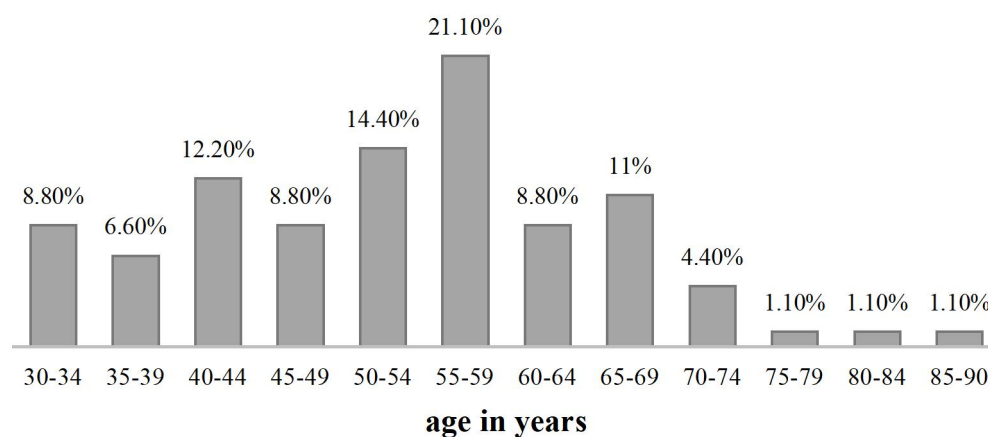
Participants

Power calculations for the linear regression analyses at the baseline level with small effect size, a power of .8 and level of significance of $\alpha = .05$ suggested a minimum sample size of $n = 73$. Power calculations for multilevel models are complex and there are no universal recommendations (Field, 2017). Nevertheless, a minimum sample size of $n = 10$ for the multilevel models was aspired. As the study dealt with the experience and behavior in adulthood, individuals 30 years or older were included in the sample.

Ninety participants completed the baseline questionnaire (Sample 1) and thereof sixty participants were also part of the daily assessment (Sample 2). Sample 1 consisted of ninety adults aged 30 – 85 years ($M = 52.81$, $SD = 12.46$) (Figure 1). Almost two thirds defined their gender as female (66 %). Participants identified predominantly as Austrian (76 %), followed by Germans (22 %) and Swiss (2 %). The majority was married or in a relationship (77%), followed by participants who were single (10 %), divorced (7 %) and widowed (7 %). Half of the participants reported to have a university degree (51 %) as highest level of education, followed by apprenticeship (19 %), A levels (16 %) and statutory education (3 %). The rest (11 %) did not assign themselves to any of these categories. More than three-fourths (76 %) were employed. 20 % were retired.

Figure 1

Age distribution (Sample 1)



Sample 2 consisted of sixty adults aged 30 – 85 years ($M = 51.75$, $SD = 12.81$). More than two thirds defined their gender as female (70 %). Participants identified predominantly as Austrian (70 %), followed by Germans (27 %) and Swiss (3 %). The majority was married or in a relationship (72 %), followed by participants who were single (13 %), widowed (8 %) and divorced (7 %). Half of the participants reported to have a university degree (55 %) as

highest level of education, followed by apprenticeship (20 %), A levels (13 %) and statutory education (3 %). The rest (8 %) did not assign themselves to any of these categories. More than three-fourths (77 %) were employed. 18 % were retired.

Measures

Social approach and avoidance motivation

An adapted German version of the *Friendship Goals Items* (Elliot et al., 2006) was used to measure social approach and avoidance motivation. As the original items refer to friendships, the items were adopted for social relationships in general. The questionnaire was based on self-evaluation and consisted of 6 items that differentiated between social approach motivation (e.g., *I try to enhance the bonding and intimacy in my social relations*) and social avoidance motivation (e.g., *I try to stay away from situations that could harm my social relations*). The response options for each item ranged from 1 (*not at all*) to 7 (*very much*). High values represented a strong expression in the respective dimension. The dimension social approach motivation showed excellent reliability in Sample 1 (Cronbach's $\alpha = .95$) and in Sample 2 (Cronbach's $\alpha = .96$). The dimension social avoidance motivation showed acceptable reliability in Sample 1 (Cronbach's $\alpha = .78$) and good reliability in Sample 2 (Cronbach's $\alpha = .79$).

Age-related gains and losses

A German version of *Awareness of age-related change questionnaires 10-item short form* (AARC-10 SF; Kaspar et al., 2019; Wahl et al., 2018) was used to measure age-related gains and losses. The questionnaire was based on self-evaluation and consisted of 10 items. The AARC-10 SF differentiated between age-related gains and losses in the domains health and physical performance, cognitive performance, interpersonal relations, social-cognitive and social-emotional behavior, and lifestyle and behavior in daily life. Every domain included two items (one item for age-related gains and one item for age-related losses). The domain interpersonal relations (e.g.: *With my increasing age, I realize that I appreciate relationships*

and people much more, gains; With my increasing age, I realize that I feel more depended on the help of others, losses) was included in the analyses, as they are of importance in the social context. The response options for each item ranged from 1 (*not at all*) to 7 (*very much*). High values represented a strong expression in the respective dimension. The dimension age-related gains (all domains) showed questionable reliability in Sample 1 (Cronbach's $\alpha = .65$) and in Sample 2 (Cronbach's $\alpha = .65$). The dimension age-related losses (all domains) showed good reliability in Sample 1 (Cronbach's $\alpha = .80$) and in Sample 2 (Cronbach's $\alpha = .82$).

Social situations

As social approach and avoidance motivation occurs in the social context, only social situations were included in the analyses. Social situations were classified as situations where other people were present. Therefore the question „*Who else was present?*“ was asked. Response options were *nobody, partner, family, friends, colleagues, strangers* and *pet*. Multiple answers were possible. Once a participant chose the options that another person was present (*partner, family, friends, colleagues, strangers*) the situation was rated as a social situation.

Situational social approach and avoidance motivation

To measure situational social approach and avoidance motivation the items „*Did you want to achieve something positive?*“ (social approach motivation) and „*Did you want to avoid something negative?*“ (social avoidance motivation) were used. The response options for each item ranged from 1 (*not at all*) to 5 (*very much*). High values represented a strong expression in the respective situation.

Situational social resources

Situational social resources were operationalized with the basic psychological need *relatedness* of the *self-determination theory* (SDT; Deci & Ryan, 2000). SDT is a motivational theory and postulates three basic psychological needs: *competence, autonomy* and *relatedness*. According to SDT these needs have to be satisfied for effective social

functioning, psychological health and well-being. Former research revealed that satisfaction of the need to relatedness is most predictive to relationship functioning and well-being, indicating that the fulfillment of relatedness has greater impact on social outcomes (Patrick et al., 2007). Supposing that the psychological need of relatedness is most central in the social context, this subscale was used to measure social resources. Therefore two items of a German Version of the subscale Relatedness of the *Basic Psychological Need Satisfaction and Frustration Scale* (BPNSFS; Van der Kaap-Deeder et al., 2020) were used and adapted for context specific assessment (*In the situation I felt that the people I care about also care about me; In the situation I felt disrespected and distanced from other people*). The second item was a reversed item and the response options for each item ranged from 1 (*not at all*) to 5 (*very much*). High values represented a presence of plenty of social resources in a situation.

Procedure

Data collection was part of the study *Qualität des Alltags* and was conducted from October to December 2021. To cover a broad spectrum of age groups, recruitment took place in private, at senior fairs and associations and at university. The study group distributed fliers and applied for participation on social media and on the website of the department of Psychology of Aging at the University of Vienna. At the beginning of the investigation, participants completed an online baseline questionnaire. Participants were asked to create a personal code. The code was anonymous and its only purpose was to connect the data of the online questionnaire with the data of the experience sampling method. Demographic data, age-related gains and losses (AARC-10 SF; Kaspar et al., 2019; Wahl et al., 2018) and social approach and avoidance motivation (Friendship Goals Items; Elliot et al., 2006) were assessed. The completion took approximately 30 minutes. At the end of the baseline questionnaire, participants were asked to install the app ESM-Quest on their smartphone. Participants without smartphones or with Apple devices were provided with smartphones. For a better understanding there were instructions and manuals for downloading the app, completing the

ESM-questionnaire and the usage of the smartphones available. There was also a hotline for any upcoming questions or problems during the participation. Phone calls were possible between 8 a.m. and 8:15 p.m. everyday. After entering the personal code in the app, a test questionnaire was administered. The test questionnaire was for illustrative purposes and the data was not included in the analyses. The assessment started the next day (one day after the test questionnaire was completed). Participants were asked to complete a short questionnaire six times a day for one week. Therefor the app used signals (a gong and a vibration). The completion of the questionnaire took approximately 3-5 minutes. The signals occurred between 8 a.m. and 8:00 p.m. at random times. There was a minimum of 60 minutes between two signals. Situational social approach and avoidance motivation (Nikitin & Freund, 2018) and situational social resources (BPNSFS; Van der Kaap-Deeder et al., 2020) were assessed with the app ESM Quest. As there was a focus on behavior and experiences in the social context only situations where another person was present (partner, family, friends, colleagues, strangers) were included in the analyses. A final questionnaire was completed on the last day of the survey. Personal experiences during the data collection and feedback were assessed. The final questionnaire took about 1-3 minutes.

Analyses

Data were analyzed using IBM SPSS Statistics (Version 27) predictive analytics software and PROCESS macro version 3.5 (Hayes, 2013). Data consisted of two samples. In Sample 1 for each study participant, data on one level was available: at person level (Level 2; age-related gains and losses in the domain interpersonal relations, social approach and avoidance motivation). In Sample 2 for each study participant, data on two levels was available: at person level (Level 2; age-related gains and losses in the domain interpersonal relations) and at day level (Level 1; situational social approach and avoidance motivation and situational social resources, with the day-level data being nested within the person-level data).

Hypotheses 1 and 2 were tested in Sample 1 using linear regression analyses. Age-related gains (Hypothesis 1) and losses (Hypothesis 2) in the domain interpersonal relations were predictors. Social approach motivation (Hypothesis 1) and social avoidance motivation (Hypothesis 2) were the outcome variables. The predictor variables age-related gains and losses in the domain interpersonal relations were grand mean centered.

To test Hypotheses 3, 4, 5, 6, 7 and 8, I ran multilevel analyses in Sample 2. I started with a null model that included the intercept as the only predictor. In Model 1, fixed main effect variables were entered and in Model 2, random effects were entered. The improvement of one model above the previous one was examined using the Akaike Information Criterion (AIC). A decreasing value of AIC indicates a better fit of the model. The predictor variables at Level 2 age-related gains and losses in the domain interpersonal relations were grand mean centered. The predictor variable at Level 1 situational social resources was centered within the individuals.

Results

Descriptive statistics

Descriptive statistics for all study variables at Level 2 can be found in Table 1. Correlations among all the study variables at Level 2 are displayed in Table 2. To calculate the correlations the scores of Sample 1 were used. Age was significantly related to age-related losses in the domain interpersonal relations, $r = .29, p < .001$. There was a strong positive correlation between social approach motivation and age-related gains in the domain interpersonal relations, $r = .53, p < .001$. See Appendix C for a more detailed correlation matrix with all domains of age-related gains and losses.

Table 1

Descriptive statistic at Level 2

	Sample 1		Sample 2	
	(n = 90)		(n = 60)	
Variable	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Social approach motivation	5.46	1.38	5.44	1.43
Social avoidance motivation	4.60	1.40	4.69	1.43
Age-related gains interpersonal relations	5.30	1.51	5.22	1.55
Age-related losses interpersonal relations	2.40	1.61	2.45	1.57

Note. Sample 1 included participants who only took part of the baseline assessment. Sample 2 included participants who took part of the baseline assessment and the daily assessment with the app. *n* = sample size, *M* = mean, *SD* = standard deviation

Table 2.

Correlations for Study Variables at Level 2

Variable	1	2	3	4	5
1. Age	-				
2. Social approach motivation		-			
3. Social avoidance motivation		.14	-		
4. Age-related gains interpersonal relations		.53**		-	
5. Age-related losses interpersonal relations	.29**			.10	-

Note. * $p < .05$, ** $p < .001$

Inferential statistics

Age-related gains in the domain interpersonal relations and social approach motivation

A linear regression was carried out to test if age-related gains in the domain interpersonal relations significantly predict social approach motivation (Hypothesis 1). The results of the regression indicated that the model explained 29 % of the variance and was significant, $F(1, 88) = 35.11, p < .001, B = .49, \beta = .53, R^2 = .285$. As expected, individuals who perceived more age-related gains in the domain interpersonal relations reported more social approach motivation.

Age-related losses in the domain interpersonal relations and social avoidance motivation

A linear regression was carried out to test if age-related losses in the domain interpersonal relations significantly predict social avoidance motivation (Hypothesis 2). The results of the regression indicated that there was no significant association between age-related losses in the domain interpersonal relationships and social avoidance motivation, $F(1,88) = 0.09, p = .765, B = .03, \beta = .03, R^2 = .001$. Unexpectedly, individuals who perceived more age-related losses in the domain interpersonal relations did not report more social avoidance motivation.

Multilevel analyses

To investigate effects of Level 2 on Level 1, multilevel analyses were used.

Age-related gains in the domain interpersonal relations, situational social approach motivation and situational social resources

To test Hypotheses 3 and 4, I started with a null model that included the intercept situational social approach motivation as the only predictor. In Model 1, age and age-related gains in the domain interpersonal relations and situational social resources were entered as fixed main effect variables. In Model 2 the variable situational social resources was entered as random effect (Table 3). In the null model the intraclass correlation coefficient (ICC) for situational social approach motivation was $\rho = .19$, meaning that 19 % of the variance can be

explained by between-person variation. Hence, 81 % of the variation of situational social approach motivation can be explained by within-person variation. Analysis revealed that Model 1 showed an improvement over the null model (difference of AIC = -79.37). Model 2 did not show an improvement over Model 1 (difference of AIC = +0.61). Age-related gains in the domain interpersonal relations significantly predicted situational social approach motivation in Model 1, $F(1, 69.10) = 0.09, p = .048$ and in Model 2, $F(1, 69.01) = 0.09, p = .048$. Situational social resources significantly predicted situational social approach motivation in Model 1, $F(1, 68.17) = 0.36, p < .001$. The variable situational social resources was entered as random effect in Model 2 and was significant, $F(1, 51.33) = 0.37, p < .001$. There were no age-associated effects in Model 1, $F(1, 1.26) = 0.01, p = .266$ or Model 2, $F(1, 1.26) = 0.01, p = .266$. Taken together, Hypotheses 3 and 4 were supported by the data. As expected, individuals who perceived more age-related gains in the domain interpersonal relations reported more situational social approach motivation in social situations. In line with the assumption, situational social resources were positively related to situational social approach motivation.

Age-related losses in the domain interpersonal relations, situational social avoidance motivation and situational social resources

To test Hypotheses 5 and 6, I started with a null model that included the intercept situational social avoidance motivation as the only predictor. In Model 1, age and age-related losses in the domain interpersonal relations and situational social resources were entered as fixed main effect variables. In Model 2 the variable situational social resources was entered as random effect (Table 4). In the null model the intraclass correlation coefficient (ICC) for situational social avoidance motivation was $\rho = .41$ meaning that 41 % of the variance can be explained by between-person variation. Hence, 59 % of the variation of social avoidance motivation can be explained by within-person variation. Analysis revealed that Model 1 showed a significant improvement over the null model (difference of AIC = -0.49) and Model

2 showed a significant improvement over the Model 1 (difference of AIC = -1.59). Though, there were no significant effects in Model 1 or Model 2. Age-related losses in the domain interpersonal relations did not significantly predict situational social avoidance motivation in Model 1, $F(1, 0.48) = 0.06, p = .491$ or in Model 2, $F(1, 0.48) = 0.06, p = .492$. Further, situational social resources did not significantly predict situational social avoidance motivation in Model 1, $F(1, 0.53) = -0.04, p = .465$ or Model 2, $F(1, 0.24) = -0.03, p < .625$ in Model 2. There were no age-associated effects in Model 1, $F(1, 0.296) = -0.01, p = .589$ or Model 2, $F(1, 0.30) = -0.01, p = .588$. Hypotheses 5 and 6 were not supported by the data, leading to the rejection of these hypotheses. Contrary to the assumptions, individuals who perceived more age-related losses in the domain interpersonal relations did not report more situational social avoidance motivation in social situations and the amount of situational social resources did not predict situational social avoidance motivation in social situations.

Age-related gains and losses in the domain interpersonal relations and situational social resources

To test Hypotheses 7 and 8, I started with a null model that included the intercept situational social resources as the only predictor. In Model 1, age and age-related gains and losses in the domain interpersonal relations were entered as fixed main effect variables (Table 5). In the null model the intraclass correlation coefficient (ICC) for situational social resources was $p = .27$ meaning that 27 % of the variance can be explained by between-person variation. Hence, 73 % of the variation of situational social resources can be explained by within-person variation. Analysis revealed that Model 1 showed no improvement over the null model (difference of AIC = +3.65). There were no significant effects in Model 1. Age-related gains, $F(1, 1.61) = 0.05, p = .209$ and losses in the domain interpersonal relations, $F(1, 0.88) = -0.03, p = .354$ did not significantly predict situational social resources. There were no age-associated effects, $F(1, 0.20) < 0.01, p = .654$. Hypotheses 7 and 8 were not supported by the data, leading to the rejection of these hypotheses. Contrary to the assumptions, individuals

who perceived more age-related gains in the domain interpersonal relations did not report more social resources and individuals who perceived more age-related losses in the domain interpersonal relations did not report less situational social resources in social situations.

Table 3.

Unstandardized Estimates and (SE) from a Multilevel Model Predicting Situational Social Approach Motivation

	Null model			Model 1			Model 2		
Variable	Estimate	SE	p	Estimate	SE	p	Estimate	SE	p
Intercept	3.86	0.07	< .001	3.58	0.27	< .001	3.58	0.27	< .001
Individual level (Level 2)									
Age				0.01	0.01	.266	0.01	0.01	.266
Age-related gains interpersonal relations				0.09	0.04	.048	0.09	0.04	.048
Situational level (Level 1)									
Situational social resources				0.36	0.04	< .001	0.37	0.05	< .001
ICC	.194								
AIC	2861.658			2782.288			2782.897		

Note. SE = standard error, ICC = intraclass correlation coefficient, AIC = Akaike Information Criterion

Table 4.

Unstandardized Estimates and (SE) from a Multilevel Model Predicting Situational Social Avoidance Motivation

	Null model			Model 1			Model 2		
Variable	Estimate	SE	p	Estimate	SE	p	Estimate	SE	p
Intercept	2.95	0.13	< .001	3.24	0.55	< .001	3.25	0.55	< .001
Individual level (Level 2)									
Age				-0.01	.01	.589	-0.01	0.01	.588
Age-related losses interpersonal relations				0.06	0.08	.491	0.06	0.08	.492
Situational level (Level 1)									
Situational social resources				-0.04	0.06	.465	-0.03	0.07	.625
ICC	.412								
AIC	3309.04			3308.55			3306.96		

Note. SE = standard error, ICC = intraclass correlation coefficient, AIC = Akaike Information Criterion

Table 5.

Unstandardized Estimates and (SE) from a Multilevel Model Predicting Situational Social Resources

Variable	Null model			Model 1		
	Estimate	SE	p	Estimate	SE	p
Intercept	4.10	0.06	< .001	4.00	0.24	< .001
Individual level (Level 2)						
Age				<0.00	<0.00	.654
Age-related gains interpersonal relations				0.05	0.04	.209
Age-related losses interpersonal relations				-0.03	0.04	.354
ICC	.271					
AIC	2148.88			2152.53		

Note. SE = standard error, ICC = intraclass correlation coefficient, AIC = Akaike Information Criterion

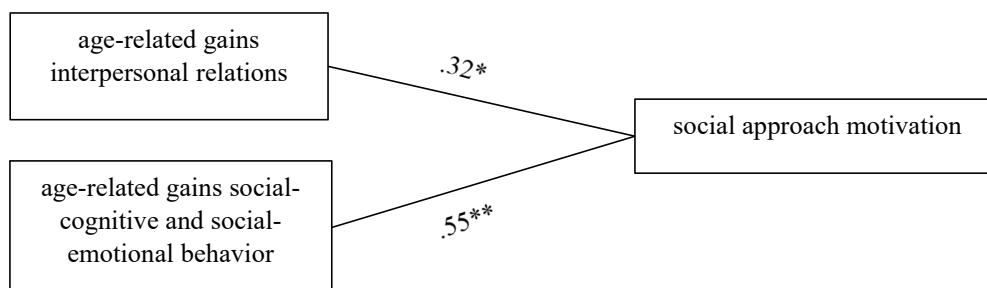
Exploratory Analyses

Referring to the stereotype-matching effect (Levy & Leifheit-Limson, 2009), only age-related gains and losses in the domain interpersonal relations were included in the analyses. To investigate whether other domains of the age-related gains and losses are related to social approach and avoidance motivation, I performed exploratory multiple regressions. A stepwise regression was carried out to identify possible predictors of social approach motivation out of the following candidate variables: age related gains in the domains health and physical

functioning, cognitive functioning, interpersonal relations, social-cognitive and social-emotional functioning, and lifestyle and engagement. Using the step method it was found that the domains interpersonal relations ($B = .32, \beta = .36, p < .001$) and social-cognitive and social-emotional behavior ($B = .55, \beta = .44, p < .001$) contributed significantly to the model (Figure 2). The R^2 value was 0.449 so 45 % of the variation in social approach motivation can be explained by the model containing age-related gains in the domains interpersonal relations and social-cognitive and social-emotional behavior, $F(1,88) = 35.40, p < .001$. The domains health and physical functioning, cognitive functioning, and lifestyle and engagement did not significantly predict social approach motivation and were therefore not included in the model. These results indicate that age-related gains in the domains interpersonal relations and social-cognitive and social-emotional behavior are associated with social approach motivation.

Figure 2

Exploratory multiple regression analysis predicting social approach motivation



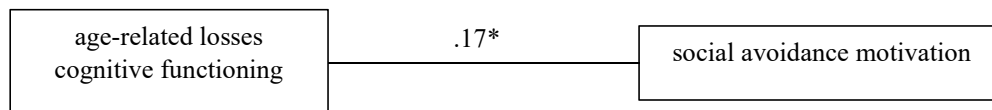
Note. * $p < .05$, ** $p < .001$

A second stepwise regression was carried out to identify possible predictors of social avoidance motivation out of the following candidate variables: age related losses in the domain health and physical functioning, cognitive functioning, interpersonal relations, social-cognitive and social-emotional functioning, and lifestyle and engagement. Using the step method it was found that only the domain cognitive functioning ($B = .17, \beta = .21, p = .045$) contributed significantly to the model (Figure 3). The R^2 value was 0.045 so 5 % of the variation in social avoidance motivation can be explained by the model containing age-related

losses in the domain cognitive functioning, $F(1,88) = 4.120, p = .045$. The remaining domains health and physical functioning, interpersonal relations, social-cognitive and social-emotional functioning, and lifestyle and engagement did not significantly predict social approach motivation and were therefore not included in the model. These results indicate that only age-related losses in the domain cognitive functioning are associated with social avoidance motivation.

Figure 3

Exploratory multiple regression analysis predicting social avoidance motivation



Note. * $p < .05$, ** $p < .001$

There is evidence that social approach and avoidance motivation change across adulthood. Ebner et al. (2006) describe a motivational shift during the life span and found that older adults were more orientated toward maintenance and avoidance of losses and less growth orientated. In another study, older adults were more avoidance motivated than younger adults, but the two groups did not differ in their approach motivation (Nikitin et al., 2014). In contrast to past research regarding social approach and avoidance motivation across adulthood (Nikitin & Freund, 2019; Nikitin et al., 2014), correlation analyses did not show any association between age and social approach or avoidance motivation. A possible explanation for the insignificant age-effects is that adults in advanced age were underrepresented in the samples. Correlation analyses merely found a significant relationship between age-related losses in the domain interpersonal relations and age (see Table 2). That suggests that individuals perceive more losses with growing age. Results showed that age-

related gains in the domain interpersonal relations predicted social approach motivation (Hypothesis 1). To find out more about this connection across adulthood, age was included as moderator in the regression analysis. Therefore a moderation analysis was used to determine whether the found interaction between age-related gains in the domain interpersonal relations and social approach motivation was moderated by age. Analysis did not show that age moderated the effect between age-related gains in the domain interpersonal relationships and social approach motivation significantly, $\Delta R^2 = 1.5 \%$, $F(1, 86) = 1.87$, $p = .175$, 95 % CI[-0.003, 0.020]. As there was no significant association between age-related losses in the domain interpersonal relations and social avoidance motivation (see Hypothesis 2), an additional moderation analysis with age as moderator was not conducted.

Discussion

The goal of the current study was to examine how age-related gains and losses in the domain interpersonal relations influence social approach and avoidance motivation and the perception of social resources in everyday life. The results revealed that age-related gains in the domain interpersonal relations significantly predicted social approach motivation (trait) and situational social approach motivation (state). That indicates that individuals with more age-related gains in the domain interpersonal relations are more social approach motivated in general and also show more social approach motivation in their daily routine. The perception of social resources in a social situation was correlated with situational social approach motivation. That means that individuals show more situational social approach motivation in social situations in which they perceive plenty of social resources.

Age-related gains and losses in the domain interpersonal relations were handled as stable personality dispositions (trait). Social approach and avoidance motivation were considered as trait and state. A trait refers to an individual's personality and is a long term characteristic of a person, whereas a state is a temporary condition that individuals experience for a short period of time. Hypotheses 1 and 2 referred to data of the online questionnaire and

handled the variables age-related gains and losses in the domain interpersonal relations and social approach and avoidance motivation as stable trait variables. Hypotheses 3, 4, 5, 6, 7, and 8 referred to the influence of age-related gains and losses on the perception of situational social resources and situational social approach and avoidance motivation in social situations. Therefore, the experience sampling method was used.

Results from the linear regression analysis supported Hypothesis 1 that age-related gains in the domain interpersonal relations significantly predict social approach motivation. This finding suggests that people who perceive aging as developmentally beneficial in their interpersonal relations also pursue more positive social outcomes such as intimacy and acceptance in their social relationships. An additional exploratory multiple regression with all domains of age-related gains showed that beside the domain interpersonal relations the domain social-cognitive and social-emotional behavior significantly predicted social approach motivation. This finding is in line with the stereotype-matching effect saying that there is a stronger effect if there is a match between content and outcome domain (Levy & Leifheit-Limson, 2009) and with former studies indicating a domain-specific influence of views on aging (Voss et al., 2017; Kornadt & Rothermund, 2015). As expected the domain interpersonal relations plays a role in social approach motivation. The results showed that the domain social-cognitive and social-emotional behavior also effect social approach motivation, indicating that this domain also plays a role in the social context.

Unexpectedly, age-related losses in the domain interpersonal relations were not related to social avoidance motivation, leading to the rejection of Hypothesis 2. An exploratory multiple regression with all domains of age-related losses revealed that only the domain cognitive functioning significantly predicted social avoidance motivation. This finding contradicts the stereotype-matching effect (Levy & Leifheit-Limson, 2009) and former research on domain-specific influence of views on aging (Voss et al., 2017; Kornadt & Rothermund, 2015). Hence, losses in the domain interpersonal relations were expected to

effect a corresponding outcome domain as in the present study social avoidance motivation.

The found effect of age-related losses in the domain cognitive functioning did not match with the outcome domain social avoidance motivation. A possible interpretation of this finding is that there is a stronger matching effect of positive views on aging with social approach motivation compared to negative views on aging with social avoidance motivation.

Participants showed the highest value in the domain cognitive functioning of age-related losses (see Appendix D), what leads to the assumption that losses in the domain cognitive functioning might be regarded as common concomitant with aging. Due to this salience it may act more boundless and extend easier to other domains (in the present study social avoidance motivation).

Multilevel analyses confirmed the results of the linear regression analyses. As expected, individuals with more age-related gains in the domain interpersonal relations showed more situational social approach motivation in social situations (Hypothesis 3). Individuals with more age-related losses in the domain interpersonal relations did not show more social avoidance motivation (Hypothesis 5).

Studies show that the availability of goal-relevant resources is associated with more approach and less avoidance goals (Schnelle et al., 2010; Bromberg, 2018). In the present study, the perception of situational social resources was associated with more situational social approach motivation in social situations (Hypothesis 4), but there was no connection between situational social resources and social avoidance motivation (Hypothesis 6). That indicates that individuals show more social approach motivation in social situations in which they perceive more social resources, but the perception of few social resources does not lead to more social avoidance motivation.

The concept awareness of age-related change (AARC, Diehl & Wahl, 2010) can be seen as an indicator of the subjective perception of resources. Age-related gains indicate the presence of resources, whereas age-related losses indicate the absence of resources (Dutt et al.,

2018). Neupert and Bellingtier (2017) also suggest that views on aging may work as a filter, whereas individuals with negative views on aging may focus more on negative aspects in their life and thus perceive more losses. On this account age-related gains and losses in the domain interpersonal relations was expected to influence the perception of social resources. It was assumed that age-related gains in the domain interpersonal relations are related to more perceived social resources, whereas age-related losses in the domain interpersonal relations are related to less perceived social resources. Contrary to these assumptions, age-related gains and losses in the domain interpersonal relations did not affect the perception of situational social resources (Hypotheses 7 and 8). Individuals with more age-related gains in the domain interpersonal relations did not report more situational social resources in social situations and individuals with more age-related losses in the domain interpersonal relations did not report less social resources. A possible explanation is that age-related gains and losses were assessed as trait variables. There is evidence that the perception of age-related gains and losses change over the day (Neupert & Bellingtier, 2017). These intraindividual fluctuations were not captured with a singular questionnaire.

Taken together, the results are partly in line with past research. As supposed, there was a connection between views on aging and social approach motivation. Age-related gains in the domain interpersonal relations was associated with more trait social approach motivation and more situational social approach motivation. Contrary to the expectation, age-related losses in the domain interpersonal relations was neither associated with more trait social avoidance motivation nor situational social avoidance motivation. In line with the assumptions, the perception of situational social resources was associated with more situational social approach motivation in social situations, but unexpectedly there was no connection between less situational social resources and situational social avoidance motivation. Age-related gains and losses in the domain interpersonal relations did not affect the perception of situational social resources.

This is the first study to investigate the connection between the concept of age-related change and social approach and avoidance motivation. The present study provides important insights into the role of views on aging on social motivation and extends the knowledge why individuals differ in their social approach and avoidance motivation. Although there were no age-associated effects, the findings suggest that age-related gains in the domain interpersonal relations affect social approach motivation.

A key strength of the present study is the usage of different methods for data collection. Online questionnaires delivered detailed information about age-related gains and losses and social approach and avoidance motivation as trait variables. With the experience sampling method daily experiences were captured. Situational social approach and avoidance motivation and situational social resources as state variable were assessed with the ESM. Participants were asked to describe their current condition and situation several times a day over a certain period. Thereby daily experiences and conditions were captured directly at the moment, which resulted in less biases compared to retrospective survey methods. To make data collection as unobtrusive and discreet as possible the mobile app ESM Quest, which the participants could install on their private smartphone, was used. If required there were also smartphones with an installed app provided to avoid the exclusion of individuals without smartphones.

The study has some limitations that have to be discussed. One potential limitation is the selective nature of the samples. First, it is possible that the sample was biased toward individuals with a higher level of education. In both samples more than half of the participants were university graduates. Second, a certain degree of technological knowledge was presupposed for using the app ESM Quest. To counteract this problem a hotline that was available everyday between 8 a.m. and 8:15 p.m. was established and a precise instruction inclusive test questionnaire and manuals were provided. Nevertheless, the requirements for the participation in the study probably excluded individuals with little or no technological

knowledge. This could be the reason why older adults were underrepresented in the samples (in Sample 1 only 3 % were 75 years and older). As such, caution is advisable when generalizing the results to other populations.

Another limitation could be the measure used to collect the data. It has to be acknowledged that the Cronbach's α of the overall dimension age-related gains is .65 in Sample 1 and Sample 2. Although only the domain interpersonal relations was used for the analyses, the questionable reliability must be taken into account, when interpreting the data. Further, the use of self-report measures could lead to socially desirable response behavior and make participants tend to respond in a manner that they believe will be viewed favorably by others. That could be the case in the assessment of social approach and avoidance motivation at baseline level. Participants could especially tend to present themselves in a favorable way rather than to give accurate answers in the assessment of social approach motivation, leading to higher values.

Moreover, any situation where another person was present was classified as a social situation no matter if there was an actual interaction. This approach was preferred over the inclusion of situations that were explicitly rated as social activity due to two reasons. First, it was expected that social approach and especially avoidance motivation also occur in situations, where someone else is present without explicitly rating the situation as social activity. Second, the inclusion of merely social activity as social situations could lead to insufficient situations (only 14 % were explicitly rated as social activity). It might also be that participants were more likely to ignore the signals of the app while interacting with someone due to a lack of time or avoid being impolite.

Furthermore, some problems with the app ESM Quest have to be mentioned. In spite of piloting the app in advance, some participants reported upcoming issues. In some cases the app stopped whistling after a few days which led to less situations in the analyses. Due to the

hotline and individual support several problems were solved. Nevertheless, there was a data loss due to that concern.

Finally, the findings have to be interpreted in consideration of the current covid-19 pandemic. Data was collected between October 2021 and January 2022. During this time, a lockdown was declared in Austria and new mutations overrun the European continent. That has led to severe behavioral and social restrictions accompanied by insecurity and fears. As a consequence people had to minimize their social contacts, resulting in a reduced number of situations that could be included in the analyses. The pandemic might have also reinforced negative views on aging. In the context of the pandemic older adults are perceived as members of a risk group. They are portrayed as a helpless and vulnerable group in public discourse. Kessler and Bowen (2020) warn that covid ageism may have a negative impact on mental health of older individuals. A study compared perceived loneliness before and during the pandemic in community-dwelling elderly in Lower Austria. Individuals reported a slight, but significant increase of loneliness during the covid-19 pandemic. These findings indicate a negative development in loneliness among older adults during the pandemic (Heidinger & Richter, 2020). Although there is also evidence that older compared to younger adults get easier on with the pandemic, negative views on aging bring negative effects. Recent research revealed that older adults were more effective in handling negative consequences of the pandemic. Younger individuals reported more psychological distress and loneliness during the pandemic. However, negative views on aging negatively influenced these factors, whereas individuals with negative views on aging reported higher levels of distress and loneliness (Losada-Baltar et al., 2020). Due to the pandemic with multiple consequences, which cannot all be comprehensible yet, the findings have to be interpreted in the light of this special situation.

This research highlights the importance of perceptions of one's own aging in the social context and in social functioning. The connection of awareness of age-related gains and losses

and social approach and avoidance motivation is a promising future direction when focusing on optimizing the developmental potential in older adulthood. Future studies should include more adults in advanced age to better understand the connection between awareness of age-related change and social motivation across the life span. A sample with more elderly individuals might also increase finding age-associated effects. Moreover, a greater focus on the different domains of awareness of age-related change could produce interesting findings that account more for the effects of views on aging. Referring to the stereotype-matching effect only the domain interpersonal relations was included into the analyses. Exploratory analyses revealed that other domains also influence social motivation. Hence, it would be interesting to find out more about cross-domain effects.

However, the direction of causation remains open. Data showed that age-related gains in the domain interpersonal relations was related to trait and situational social approach motivation. It was assumed that age-related gains indicate the presence of resources and lead to the pursuit of more social approach motivation. But it is also possible that social approach motivation and associated positive outcomes like more relationship satisfaction, well-being, less loneliness and less conflict in romantic relationships (Gable, 2006; Kuster et al., 2017), leads to the perception of more age-related gains. Experimental and longitudinal studies in the future can give information about the causation.

In conclusion, this study is the first to investigate the connection between the concept of age-related change, social approach and avoidance motivation and the role of social resources. Using the experience sampling method, daily experiences were captured contemporaneously when occurring. A central finding was that age-related gains in the domain interpersonal relations predicted social approach motivation and situational social approach motivation. That indicates that individuals who perceive aging as developmentally beneficial in their interpersonal relations pursue a more positive social outcome such as intimacy and acceptance in their social. Further, the perception of situational social resources

was positively correlated with situational social approach motivation. That implies that individuals show more social approach motivation in situations with plenty perceived social resources.

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Appendix A

Baseline questionnaire

Social approach and avoidance motivation

Bitte geben Sie hier an, wie gut die folgenden Aussagen Ihre Beziehungen beschreiben.		Trifft gar nicht zu						Trifft genau zu
1.	Ich versuche meine Beziehungen zu vertiefen.	☐	☐	☐	☐	☐	☐	☐
2.	Ich versuche in meinen Beziehungen zu wachsen und mich zu entwickeln.	☐	☐	☐	☐	☐	☐	☐
3.	Ich versuche in meinen Beziehungen Verbundenheit und Nähe zu verstärken.	☐	☐	☐	☐	☐	☐	☐
4.	Ich versuche mit meinen Beziehungen an freudigen und sinnvollen Erfahrungen teilzuhaben.	☐	☐	☐	☐	☐	☐	☐
5.	Ich versuche Unstimmigkeiten und Konflikte mit meinen Beziehungen zu vermeiden.	☐	☐	☐	☐	☐	☐	☐
6.	Ich versuche mich von Situationen, die meine Beziehungen gefährden könnten, fernzuhalten.	☐	☐	☐	☐	☐	☐	☐
7.	Ich versuche zu vermeiden, dass mich meine Beziehungen verraten, peinlich machen oder verletzen.	☐	☐	☐	☐	☐	☐	☐
8.	Ich versuche mich zu vergewissern, dass in meinen engen Beziehungen nichts Schlimmes passiert.	☐	☐	☐	☐	☐	☐	☐

Social approach motivation: Item 1, 2, 3, 4

Social avoidance motivation: Item 5, 6, 7, 8

Age-related gains and losses

Jeder Mensch hat bestimmte Vorstellungen davon, wie das Leben im Alter aussieht. Im Folgenden werden wir Ihnen Fragen zum Alter, dem Älterwerden und zu Veränderungen, die mit dem Alter einhergehen können, stellen.

Zuerst finden Sie hier einige Aussagen zu Veränderungen, die man **in jedem Alter** erleben kann. Bitte geben Sie an, inwiefern Sie diese Veränderungen erleben.

Mit zunehmenden Alter bemerke ich, dass ...

	Gar nicht							Sehr stark
1. ...ich Beziehungen und andere Menschen wesentlich mehr schätze.	☐	☐	☐	☐	☐	☐	☐	☐
2. ...meine geistige Leistungsfähigkeit abnimmt.	☐	☐	☐	☐	☐	☐	☐	☐
3. ...ich meiner Gesundheit mehr Aufmerksamkeit widme.	☐	☐	☐	☐	☐	☐	☐	☐
4. ...ich meine Aktivitäten einschränken muss.	☐	☐	☐	☐	☐	☐	☐	☐
5. ...ich mehr Erfahrung und Wissen habe, um Dinge und Menschen einzuschätzen.	☐	☐	☐	☐	☐	☐	☐	☐
6. ...ich ein besseres Gespür dafür habe, was mir wichtig ist.	☐	☐	☐	☐	☐	☐	☐	☐
7. ...ich weniger Energie habe.	☐	☐	☐	☐	☐	☐	☐	☐
8. ...ich mich mehr von der Hilfe anderer abhängig fühle.	☐	☐	☐	☐	☐	☐	☐	☐
9. ...ich mehr Freiheit habe, meine Tage so zu erleben, wie ich will.	☐	☐	☐	☐	☐	☐	☐	☐
10. ...es mir schwerer fällt, mich zu motivieren.	☐	☐	☐	☐	☐	☐	☐	☐

Age-related gains: Item 1, 3, 5, 7, 9; Age-related losses: Item 2, 4, 6, 8, 10

Health and physical functioning: Item 3, 6; Cognitive functioning: Item 2, 5;

Interpersonal relations: Item 1, 8; Lifestyle and engagement: Item 4, 9

Social-cognitive and social-emotional functioning: Item 7, 10

Appendix B

Experience sampling method questionnaire

Als das Signal ertönte:

Wer war sonst noch anwesend? ☐ Niemand

☐ Partner*in

☐ Familie

☐ Freund*innen

☐ Kolleg*innen

☐ Fremde Personen

☐ Haustiere

Wollten Sie in der Situation ...

gar nicht

sehr stark

etwas Positives erreichen?

☐
☐
☐
☐
☐

etwas Negatives vermeiden?

☐
☐
☐
☐
☐

Wie erlebten Sie die Situation?

trifft gar nicht zu

trifft voll und ganz zu

In der Situation spürte ich, dass ich
den Menschen, die mir etwas
bedeuten, auch wichtig bin.

☐
☐
☐
☐
☐

In der Situation fühlte ich mich
geringgeschätzt und distanziert von
anderen Menschen.

☐
☐
☐
☐
☐

Appendix C

Correlation matrix of age, social approach motivation, social avoidance motivation, age-related gains and age-related losses (Level 2)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Age	-														
2. Social approach motivation		-													
3. Social avoidance motivation		.14	-												
4. Age-related gains overall		.66**		-											
5. Age-related gains interpersonal relations		.53**		.69**	-										
6. Age-related gains social-cognitive and social-emotional functioning		.59**	.12	.78**	.40**	-									
7. Age-related gains lifestyle and engagement	.25*	.27**		.60**		.32**	-								
8. Age-related gains health and physical functioning		.44**		.64**	.32*	.48**	.13	-							
9. Age-related gains cognitive functioning		.40**	.18	.61**	.36**	.53*		.32**	-						
10. Age-related losses overall	.32**		.32				.10		-.17	-					
11. Age-related losses interpersonal relations	.29**				.10	-.11			-.18	.73**	-				
12. Age-related losses social-cognitive and social-emotional functioning		-.30**		-.15	-.16	-.21			-.24*	.65**	.45**	-			
13. Age-related losses lifestyle and engagement	.31**		.12					.14		.80*	.47**	.31**	-		
14. Age-related losses health and physical functioning	.13		.14							.81**	.48**	.45**	.62**	-	
15. Age-related losses cognitive functioning	.39**		.21*				.14		-.17	.71**	.34**	.29**	.53**	.43**	-

Note. * $p < .05$, ** $p < .001$

Appendix D

Descriptive statistic at Level 2 with all domains of age-related gains and losses

	Sample 1 (<i>n</i> = 90)		Sample 2 (<i>n</i> = 60)	
Variable	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Social approach motivation	5.46	1.38	5.44	1.43
Social avoidance motivation	4.60	1.40	4.69	1.43
Age-related gains overall	5.40	0.89	5.35	0.91
Age-related gains interpersonal relations	5.30	1.51	5.22	1.55
Age-related gains social-cognitive and social-emotional functioning	5.88	1.11	5.88	1.01
Age-related gains lifestyle and engagement	4.78	1.81	4.68	1.92
Age-related gains health and physical functioning	5.36	1.22	5.23	1.28
Age-related gains cognitive functioning	5.67	1.07	5.75	1.07
Age-related losses overall	2.96	1.21	3.01	1.28
Age-related losses interpersonal relations	2.40	1.61	2.45	1.57
Age-related losses social-cognitive and social-emotional functioning	2.54	1.43	2.55	1.49
Age-related losses lifestyle and engagement	2.94	1.62	3.04	1.81
Age-related losses health and physical functioning	3.53	1.74	3.53	1.78
Age-related losses cognitive functioning	3.36	1.74	3.53	1.83

Note. Sample 1 included participants who only took part of the baseline assessment. Sample 2 included participants who took part of the baseline assessment and the daily assessment with the app. Only age-related gains and losses in the domain interpersonal relations were included in the analyses. *n* = sample size, *M* = mean, *SD* = standard deviation