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Emotions, Relationships, Health and Illness into Old Age

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Abstract

There is strong evidence linking relationships and emotions to physical health outcomes. What is critically missing is a more comprehensive understanding of how these important psychosocial factors influence disease over the lifespan. In this narrative review, existing lifespan models of social support and emotion regulation are reviewed and integrated into a general conceptual framework in the health domain. This integrated model takes into account bidirectional links between relationships and emotions, as well as health behaviors, biological pathways, and health. Evidence is consistent with the utility of an integrative model attempting to understand its links to health-relevant pathways and outcomes in older adults. Future work that examines multiple pathways using prospective designs will be necessary for this work to reach its full potential, including intervention and policy opportunities.

Keywords

Social relationships; emotions; social regulation; ageing; health

1. Introduction.

1.1. What are relationships and emotions?

Relationships can be defined broadly as the actual or perceived elements of our social world [1]. One important operationalization focuses on the broader social context (e.g., social

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networks, types of relationships) in which social interactions are embedded (Smith & Christakis, 2008). A second approach focuses on the affective qualities of relationships in terms of their positivity (e.g., support), negativity (e.g., undermining), or ambivalence (i.e., both positive and negative, [3]). Emotions, on the other hand, can be defined as having cognitive, behavioral, subjective, and physiological components. Emotions reflect person-environment interactions, including those involving relationship processes [4]. These emotional responses are viewed as informational and motivational in that they guide thought and action in ways that are potentially adaptive.

1.2. Why are relationships and emotions important?

Understanding relationships and emotions are crucial given their evolutionary significance and contributions to health and well-being [5,6]. Meta-analytic evidence suggests that relationship processes such as social support are among the strongest predictors of health; an association that is comparable to well-established risk factors such as smoking and physical activity [7]. Emotions are also important to health, as indices of negative affect such as anger, depression, and anxiety predict greater disease morbidity and mortality [6]. Emerging work is also highlighting the importance of positive affective processes, such as happiness, as protective for health [8]. The current review thus has four main objectives. The first is to review existing theoretical models on relationships, emotions, and health with an emphasis on their impact on older adults (those ages 65 and older). The second objective is to present a broad, integrative framework in the health domain. A third, primary goal is to review the evidence for this framework. Finally, important clinical and policy implications will be discussed, as well as future research directions.

2. Methods

This narrative review was based on a literature search examining relationships and emotions in the health domain. The databases PsychInfo, Medline, and the Social and Behavioral Sciences Collection were searched with the keywords social relationships, emotions, health, and aging. Publications that examined these topics in the health domain were prioritized.

3. Theoretical Perspectives

There are several theoretical perspectives in lifespan development that can help in our understanding of relationships, emotions, and their impact on health in older adults. Socioemotional selectivity theory (SST) highlights the increased importance of emotional goals as individuals age, which leads older individuals to prioritize contact with emotionally close social ties compared to more peripheral ties [9]. Indeed, older adults have fewer negative and ambivalent ties in their social networks [10]. An added perspective on SST is provided by Fingerman's social input model, which highlights the dyadic nature of relationships in that older individuals may also have more positive relationships because others treat them better [11].

The strength and vulnerability integration (SAVI) model is a more general perspective built on SST that explains why older adults often have better well-being [12]. For instance, with experience older individuals have learned to avoid negative situations and/or to de-escalate

existing negativity with close others [13]. The SAVI model also extends SST by stipulating the conditions under which older adults might be negatively impacted. SAVI stipulates that older adults show greater emotional/physiological reactions during more arousing stressors given age-related changes in biological vulnerability [12]. This possibility is also consistent with dynamic integration theory, which hypothesizes that highly arousing situations may lead to the “breakdown” of systems that regulate cognitive-affective integration [14].

Finally, the Convoy model argues that the need for different relationships and support resources depends heavily on a variety of personal and situational (e.g., age, socioeconomic status) factors [15]. This model is unique in that it explicitly acknowledges different operationalizations of support, and the duality of relationships – that is their ability both to deliver responsive support and to function, at times, as sources of interpersonal conflict. The convoy model further argues that people tend to be surrounded by key support providers who accompany them throughout their lifetimes, and it predicts that the ability of social support to bolster self-efficacy and reduce stress may be major pathways linking relationships to health [15].

Without challenging the major contributions of these different models, recent research suggests that peripheral social network members may play a larger role in maintaining emotional well-being in later life than has been recognized to date [16]. In addition, although the inner core of emotionally close social network members is relatively stable in size over time, its composition may change considerably, as key network members are lost and replaced [17]. More generally, evidence suggests that older adults’ social networks exhibit not only losses, but also gains, over time, with potentially protective implications for health and well-being [17].

A broad framework depicting aspects of these major models and their implications for health over the lifespan is depicted in Figure 1. As shown in the first box, social networks provide the interpersonal context (e.g., family, friends) for positive and negative aspects of relationships [18]. In addition, positive and negative relationship processes are separable factors that allow for a consideration of their joint and independent influence (i.e., ambivalence, [3]). These social processes have bidirectional links with behavioral and emotion pathways which, in turn, have documented links to health-relevant autonomic, neuroendocrine, and immune system functioning. Alterations in these biological pathways are predicted to influence the development (i.e., morbidity) and/or course (i.e., mortality) of disease. It is also clear that coping with a chronic disease may influence relationship processes and emotions for better or worse (e.g., relationship growth, stress of caregiving).

Finally, the bottom of the model depicts processes that unfold with aging (especially in middle and later adulthood) to influence health. These processes include relationship selectivity (e.g., closeness), decreases in exposure to negative emotions, a positivity bias, relationship loss, as well as interactions between relationships and emotions such as the ability of relationships to prevent, create, and/or buffer/exacerbate (i.e., maintenance) emotional states. Notably, a lifespan perspective highlights the developmental context and cumulative effects of relationship and affective processes that shape both short-term and long-term health outcomes [19]. Occasional marital conflicts in young adulthood, for

example, trigger the release of stress hormones that tend to subside fairly quickly, but recurring marital conflicts across adulthood contribute to persistently elevated stress hormones that, in turn, increase inflammation and the risk of chronic illnesses in middle and later adulthood [20]. Troubled parent-child relationships early in life can lead to markedly increased inflammation many years later and, additionally, can sow the seeds for troubled relationships later in life that further erode health [19,21]. A single snapshot of a person's social relationships or affect at a given point or an exclusive focus on short-term health outcomes may fail to capture more serious health consequences of nonsupportive relationships. A lifespan perspective encourages a more comprehensive, developmentally-grounded view of the entwined links between social relationships, emotion, and health over the course of individuals' lives.

4. Evidence for the model

4.1. Relationship processes and behavioral/affective pathways.

Two major pathways thought to link relationships to health include behavioral and emotion-based mechanisms. There is meta-analytic evidence that social processes influence health behaviors and illness management that can influence disease development and its clinical course [22]. Structural aspects of relationships (e.g., contact) are linked to both beneficial and detrimental health behaviors depending on the context. For instance, social network control has the potential to foster beneficial behavioral changes but may backfire if the control strategies entail pressure or criticism [23]. Social networks can also encourage unhealthy norms (e.g., poor dietary practices) or increase interpersonal stress that might negatively impact health [24]. Supportive relationships have been linked to better health behaviors (e.g., greater exercise, fruit/vegetable consumption, [25]). Although more work is needed, social negativity is associated with poorer health behaviors such as less physical activity and greater alcohol consumption [26]. Once individuals develop chronic conditions (e.g., cardiovascular, cancer), relationships and emotions continue to be important as social support and social negativity are associated with higher and lower levels of treatment adherence, respectively [22]. Finally, reciprocal pathways between relationships and health behaviors are also important because poor health behaviors can lead loved ones to exert direct social control such as nagging in an attempt to change behavior [27].

A large literature links relationships to affective/emotion pathways [28]. Social networks that contain a wider range of relationships (e.g., family, friends) are associated with less loneliness and anxiety [29] and better daily mood in older adults [30]. Experimental evidence also suggests that social interactions are linked to positive and negative emotions that can also be spread through networks via social media [31]. In terms of support processes, older adults who perceive and receive greater support experience more positive affect and less negative affect [32], although this depends on relationship closeness [33]. Similarly, older adults who are more emphatic both give and receive more social support [34], and equity in provided and received support predicts greater positive affect and lower negative affect in older adults [35].

When it comes to interpersonal tensions, age differences in emotion regulation are evident. Older individuals are more likely to focus on positive compared to negative stimuli – an

effect known as a positivity bias [36]. Older adults are more emphatic in their coping as they appear to be better at recognizing emotions in complex social interactions compared to younger adults [37], although this may depend on the presence of any cognitive impairment [38]. Older adults are also more likely than younger adults to cope with interpersonal stress using passive strategies (e.g., avoidance), which are associated with lower negative affect [13]. However, when avoidance is ineffective and older adults directly experience conflict with network members, they exhibit greater negative affect than do younger adults [39]. These age differences in emotion regulation appear linked to changes in brain structures such as the dorsal lateral prefrontal cortex [36]. Due to increasing health issues in older age, dependency is also important to consider as healthy dependency that is flexible and situationally appropriate has been linked to greater positive affect and lower negative affect [40]. Finally, reciprocal pathways are important as emotions can influence relationship processes for better or worse. For instance, negative interactions at work may spillover to the home context and lead to social withdrawal, while depression is related to lower social activity for older adults [41,42].

4.2. Biological pathways that influence acute/chronic diseases.

It is certainly the case that multiple biological systems are implicated in the physiology of close ties and emotions given links to morbidity and mortality across diverse diseases. The autonomic nervous system (ANS) is likely to be one important pathway, as relationships/emotions modulate cardiovascular reactivity during laboratory stress and ambulatory blood pressure during daily life, which in turn, are associated with both the development of chronic conditions and their clinical courses [6,43]. In one meta-analysis, older adults showed greater systolic blood pressure reactions during laboratory stress indicative of greater emotional stress [44]. Although more work in the health domain is needed, of particular interest is recent research examining parasympathetic functioning as indexed by high-frequency heart rate variability (HF-HRV), which has been linked to both social and emotional regulation [28].

Neuroendocrine and immune pathways are also important to model because they interact with autonomic nervous system function and predict both cardiovascular and immune-related health outcomes [43]. Strong evidence links social and emotional processes to variations in cortisol and oxytocin which are, in turn, linked to health [43]. Cortisol responses to emotionally-evocative situations also show delayed recovery in older adults that may have implications for health [45]. Finally, immune-mediated inflammation (e.g., C-reactive protein, IL-6) has bidirectional associations with relationships/emotions and predicts the development of diverse diseases such as diabetes, cardiovascular disease, and some cancers [46]. More generally, older adults appear to be more vulnerable to immune system alterations associated with relationship conflict and negative emotions given age-related declines in physiological function [47].

Cutting-edge work in the area of biological pathways is revealing that part of the link between social processes and health is mediated by epigenetic mechanisms. Social safety is seen as a fundamental human need, and any threats to it can trigger epigenetic changes, that if prolonged over time, can be detrimental to health [48]. For instance, social threats such as

loneliness are related to what has been called the conserved transcriptional response to adversity [49]. This response, triggered by activation of the sympathetic nervous system, results in the up-regulation of genes involved in inflammation and down-regulation of genes involved in antiviral and antibody responses [49]. Although work in this area is still maturing, it will no doubt lend valuable insight into the genetic and cellular mechanisms driving links between relationships and health.

4.3. Reciprocal pathways.

Figure 1 includes important feedback loops from the development of chronic health conditions to relationships and emotions. Coping with chronic diseases can be conceptualized as a significant stressor given the multiple treatment, lifestyle, and social-psychological issues faced by patients. These stressors influence not only the patient but their close ties and hence can have a direct impact on processes in the model [50]. For instance, in one study researchers found that although social support was initially mobilized in response to a cancer diagnosis, patient distress was related to an erosion of received support from the spouse over time [51]. Similar associations exist in terms of links between chronic conditions and emotions as the number of chronic conditions predicts increased depression/anxiety and decreased positive affect [52].

4.4. Aging, relationships, and affect.

An inherent challenge for any psychosocial model of disease risk is to specify how these processes unfold over time to influence diseases that have a prolonged time course or may take decades to develop such as cardiovascular disease. Although longitudinal data are limited on this point, several perspectives highlight the role of relationships and emotions in the creation and maintenance of conditions that may ultimately influence disease morbidity and mortality [28]. With aging, changes in relationships, health status, and living conditions are associated with increases in loneliness [53]. However, successful efforts can be made to maintain family relationships and adaptively regulate emotions [1]. For instance, social support is prospectively related to lower exposure to stressors in the elderly [54]. The ability of social support to buffer the harmful effects of stress and negative affect is also well-documented and should result in effective stress management over time [18]. In contrast, negative and ambivalent ties may create greater stress exposure and negative affect that persist over time due to recurring conflicts [55].

Many people manage to maintain rewarding close relationships as they age, but they can also lose close relationships due to the death, disability, or residential relocation of family members and friends. Nearly 60 percent of women and 22 percent of men are likely to experience the death of a spouse by their mid-70s [56]. The death of close friends is also a distressingly common experience as people age. Such relationship losses contribute to loneliness and can take a substantial toll on health, with widowed older adults exhibiting worse psychological and physical health many years after the death of a spouse [57]. People who remain widowed or divorced for a longer period of time appear to be particularly vulnerable to health conditions that develop slowly, such as chronic conditions and mobility limitations [58].

Juxtaposed with such evidence of relationship losses that accumulate in later life is evidence that older adults do often seek to reorganize their social lives following a major loss by cultivating new social ties, rekindling dormant ties, or expanding exchanges with existing ties [59]. Such efforts have the potential to boost older adults' health and well-being by providing alternative sources of emotional support and companionship. Questions remain, however, about how effectively such substitute social ties compensate for lost ties, particularly when long-term needs for tangible assistance arise as health problems mount [59]. Older adults also vary in their ability to replace lost social ties, with current evidence suggesting that cognitive or mental health problems make this process more difficult [60]. Characteristics of the environment, such as access to welcoming venues for meeting and interacting with others [61], also influence older adults' opportunities to form social relationships. Understanding how older adults can compensate effectively for the loss of close social ties is especially important in view of a marked increase in the proportion of older adults living to very advanced ages, who are likely to need substantial support and assistance as health problems escalate. In addition, declining rates of marriage and child-bearing [62] may mean that future cohorts of older adults will need to turn to extended kin and non-kin for such support, and important questions remain about the long-term support-providing capacity and effectiveness of these individuals [59].

4.5. Sex differences in relationships and links with health.

The social relationships of men and women exhibit some notable differences in later adulthood, as do the implications of these relationships for health. Compared with older women, older men tend to have smaller social networks and, if they are married, tend to rely more often on their spouses as the primary source of support [63]. Older women, in contrast, also derive support from their adult children and friends [64]. Older women tend to have more frequent social interactions, engage in more reciprocal exchanges of support (both receiving and providing support), and report somewhat greater satisfaction with their social networks [63]. Having more frequent and diverse social interactions appears to afford older women, relative to older men, greater protection from psychological distress [65].

Some of these sex differences are apparent in middle adulthood, but they are amplified in later life by widowhood. Consistent with this view, older widowed men report greater feelings of loneliness and difficulties doing things alone than do older widowed women [57,66]. Greater loneliness has been linked to an increased risk of mortality among older men [67]. Similarly, among older adults who live alone, men have an elevated risk of mortality, perhaps because they tend to maintain fewer ties outside of the household and thus may be less able to call upon sources of support and companionship that would help to reduce the adverse health effects of social isolation [68,69].

The psychological toll of widowhood has long been thought to be greater for older men than older women, but this conclusion has been based primarily on small cross-sectional studies. Findings from large, prospective longitudinal studies illustrate that the long-term psychological impact of spousal bereavement depends on the timing and duration of widowhood [70]. Becoming widowed at a younger age and remaining widowed for a longer period of time (experiences that occur more often among women) are associated with

elevated depressive symptoms that abate relatively little over time [70]. This mirrors evidence, noted above, that divorce and widowed can have long-lasting effects on health [58]. All in all, the available literature suggests possible benefits of tailoring interventions aimed at strengthening social ties to the unique relationship histories, needs, and preferences of older men and women.

5. Implications and Future Directions

5.1. Intervention opportunities.

There is a relatively large literature on social support interventions and their influence on mood disorders. Most of this work shows that both social isolation and affective interventions (e.g., anger management) have relatively small, but consistent positive influences on loneliness and emotion regulation [71,72]. The intervention literature with health outcomes is smaller and complex, but several studies have shown that support interventions might be beneficial to cardiovascular risk given their impact on diabetes regulation and health behaviors more generally [73,74]. Stress reduction programs that target affective pathways also appear to have some beneficial influences on cardiac conditions, although more work is needed [75]. More generally, comprehensive psychosocial approaches that target multiple links in the theoretical chain appear promising. For instance, one such study that focused on reducing stress, increasing positive social ties, and decreasing negative social ties reduced mortality following a heart attack by 66% [76].

It is also important to note that most interventions focus on individuals who already have health problems. In a compelling analysis, Robert Kaplan [77] argued for the promise of primary prevention efforts that focus on healthy individuals. Primary prevention efforts could focus on multiple aspects of the model (e.g., reducing stress exposure, increasing positive social ties) to slow the development of disease risk over time. Consistent with this possibility, one intervention found that training families in parenting skills was related to lower levels of inflammation in the child approximately 8 years later [78].

An important practice issue relates to whether health care professionals should screen for people who are low in support or socially isolated to facilitate treatment outcomes [79]? Screening for depression in medical settings is becoming more widespread and appears beneficial primarily when there is adequate staff available for treatment [80]. Screening relationships can focus on general perceptions of perceived support in specific relationships that are important to the management of chronic conditions (e.g., spouse). There are also clinical cut-off scores for validated marital satisfaction measures that distinguish distressed marriages and could prove useful in identifying at-risk couples following chronic disease diagnosis [81]. Even if we might have difficulty treating low support, it can still be assessed for prognostic or predictive purposes along with other factors like age, sex, and family history [79] or be used to inform individualized treatment protocols such as more intensive monitoring.

Similarly, strategies for reducing loneliness and social isolation in later life will need to take into account the diverse sociodemographic, psychosocial, and health-related factors that give rise to these conditions [82,83]. Seeking to reduce loneliness among isolated older adults

living in rural areas, for example, is likely to require strategies that differ from those that might be useful in urban areas. Similarly, intervention strategies will need to be adapted for older adults with mobility limitations, vision or hearing problems, or health problems. Long-term loneliness, which may be rooted in mistrust of others or maladaptive cognitive patterns, is likely to require different intervention strategies than does loneliness caused by residential relocation or the loss of loved ones. Potential sex differences in willingness to engage in group activities or comfort with sharing emotions may also need to be considered [65]. Older women are more likely to participate in interventions [82] and to benefit from group-based programs that encourage emotional processing and reciprocal positive exchanges among participants [84]. Some interventions designed to combat loneliness and social isolation in older men, in contrast, have emphasized creating community spaces where men can work on hobbies and craft projects, engage in friendly banter, and forge new social ties after trust has been established [85]. The latter approach serves as a cautionary note that new friendships may emerge as readily from shared activities and projects as from programs focused explicitly (and overtly) on friendship formation [86]. Finally, another note of caution comes from evidence suggesting that social contacts and activities are not related to psychological health in very old adults (ages 85 and older), leading researchers to speculate that solitary activities may be as beneficial as social activities for this age group [65].

5.2 Policy Implications.

It is also important to point out that research on social relationships, emotions, and health carries important policy implications [7,87]. Importantly, psychosocial approaches are often cost effective and can contribute to medical cost containment [7]. Public policies could also be aimed at increasing funding for understanding and intervening on the more specific links between relationships, emotions, and health. As an example, the National Academies of Sciences, Engineering, and Medicine released a report on the Health and Medical Dimensions of Social Isolation and Loneliness in Older Adults, which promises to be an important statement to the field and policy-makers [88]. National initiatives are now well underway in both the United Kingdom (Campaign to End Loneliness) and Australia (Australian Coalition to End Loneliness). Finally, there will be a need to evaluate existing policies or anticipate policies that might disrupt relationships or lead to negative affective outcomes in order to plan or allocate funds for their amelioration. For instance, end of life planning policies may influence not just the emotional state of the dying person but also survivors [89].

An important but often overlooked issue is that housing and transportation policies play a role in older adults' ability to maintain social connections. Older adults in the United States strongly prefer to live in their own homes and communities for as long as possible in order to maintain ties with friends and neighbors [90]. The majority of older adults live in rural and suburban areas, however, and a lack of transportation options (especially if they have discontinued driving) can make it difficult to visit others [91]. For older adults who live in cities, public transportation is not always affordable, reliable, or safe. In addition, the proportion of older adults who live alone has risen over time, however, with 34% of older women and 21% of older men living alone in 2018 [92]; these figures are higher among the very old [91]. Living alone is a risk factor for loneliness in later life [93]. At the same time,

it is important to bear in mind that the older population is becoming more racially and ethnically diverse in the U.S., and older members of minority groups are more likely to live in multigenerational households [91]. When such multigenerational living arrangements align with family members' ideas regarding family responsibilities and family cohesiveness, they can strengthen feelings of connectedness [94].

The percent of older adults who live in long-term care facilities (e.g., nursing homes, assisted living facilities) is relatively low, ranging from 1-3% among people ages 65-84, but this figure increases to 9% among people ages 85 and older [92]. An estimated 35%, in contrast, will spend some time in a nursing home during their lifetimes [90]. Levels of loneliness and isolation tend to be high in such facilities; residents are able to describe what friendship means to them and what they would enjoy doing with friends, but relatively few report that they actually formed friendships in the facility [95].

Housing and transportation policies are needed that make it possible for older adults to live in their communities and maintain existing social connections for as long as possible. Policies are also needed that broaden the array of options for long-term care, including expanded options for home-based care, and strategies need to be developed for reducing loneliness and isolation in long-term care facilities. These efforts would bolster older adults' health and quality of life, and they have considerable urgency in view of the rapid pace of population aging in the U.S. and elsewhere.

5.3 Future Directions.

A crucial area of future inquiry is to better integrate work on relationships, emotions, and health. Recent models on the social regulation of emotions are an important conceptual development [24,96]. This work and relevant models also need to incorporate the shift over time in relationships and emotion regulation strategies in older adults [59,97].

It is also clear that technology is changing the way people experience life and connect with others. The increase in social media users worldwide and the time individuals are spending online has generated a new field of study aimed at answering questions about the benefits and pitfalls of these newer forms of social communication. Although there was initial concern that high levels of social media use might be harmful, the beneficial impact of internet use seems to depend on whether it is used to foster meaningful social connections [98]. There is also some evidence indicating that social media use is related to greater feelings of social connectedness to a greater extent as people age, although more work will be needed [99].

More generally, there is a need to test multiple pathways in the model at the same time. Many of the individual pathways are sufficiently tested, but few studies test multiple pathways to provide an estimate of the strength of each pathway. Such studies would ideally include longitudinal data in order to provide stronger inferences. Finally, more work is needed that takes into account a broader lifespan perspective that highlights how these processes might differ in important developmental periods, including infancy, childhood, adolescence, young adulthood, midlife, and older adulthood. Knowing the answers to these critical basic and applied questions will help researchers in the ultimate goal of integrating

psychosocial perspectives into medical settings and to help individuals live happier and potentially longer lives.

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Highlights

- Social relationships and emotions are powerful predictors of physical health.
- Major pathways include social and emotional regulation of health behaviors and biological function over the lifespan.
- Pathways are reciprocal, as chronic health conditions also influence social and emotional processes.
- This body of work has important intervention and policy implications.

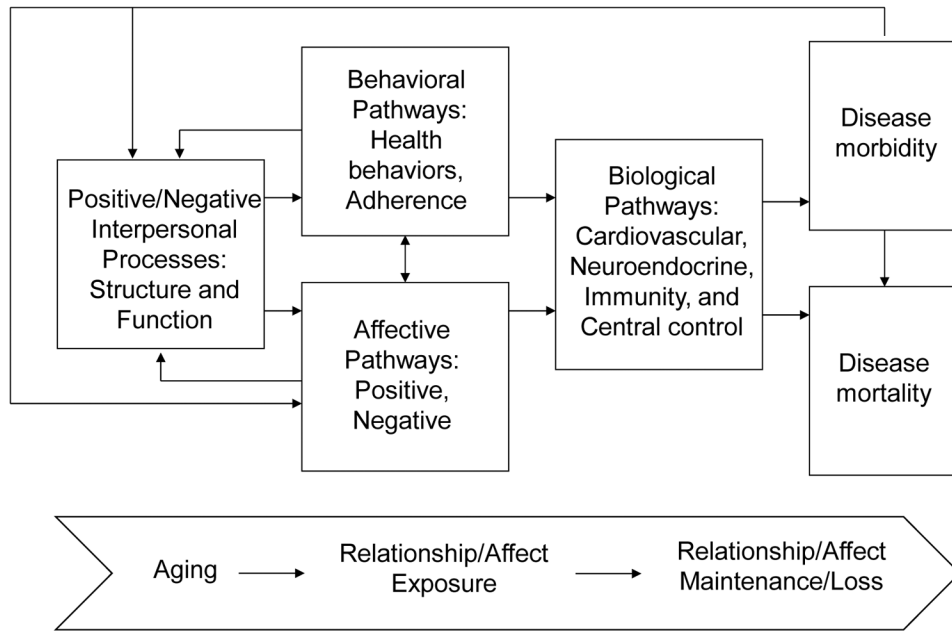


Figure 1. Broad model linking relationships, affect, and health-relevant pathways over time.