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Friendships research: a narrative review

Abstract

This narrative review is based on current (2024-2025) literature on friendships. That literature can be categorized as characteristics of friendships, positive effects, risk factors/predictors of friendship dissolution and buffers for maintaining relationships. The characteristics have included friends being a similar age and body mass index and friends having brains that are in synchrony, especially synchrony of alpha waves. The positive effects include physical, mental and neuroendocrine health. The risk factors/predictors of friendship dissolution include older age, loneliness, depression, aggression, fear of missing out, inappropriate posting online, online friendships, and jealousy. Internet use by older adults was the only buffer for loneliness or the lack of friendships. Methodological limitations of this literature include the lack of intervention studies and the very limited discussion of friendship characteristics that could inform intervention research.

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Tiffany Field
University of Miami/Miller School of Medicine and Fielding Graduate University, USA

Correspondence: Tiffany Field, PhD, University of Miami/Miller School of Medicine and Fielding Graduate University, USA, Tel 305-975-5029

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Introduction

Friendships research: a narrative review

Friendships have been defined as mutually affectionate relationships. They are important at all ages because they provide companionship, emotional support and a sense of belonging. Without them, loneliness and depression can occur. A significant literature on friendships has preceded this review. Because that literature has already been reviewed, this narrative review is focused on the current literature (2024-2025). This narrative review of the current literature on friendships research involved entering the search terms friendships and 2024-2025 into the search engines of PubMed and PsycINFO. Exclusion criteria included case studies and non-English papers. This review of the current literature on friendships is comprised of 18 papers that are divided into sections that are labeled characteristics, effects, risk factors and buffers. Only 3 papers were found on friendship characteristics, 4 papers on their effects and 2 papers on buffers in the current literature. In contrast, as many as 9 papers appeared in this current literature on risk factors/predictors of friendship dissolution.

Characteristics of friendships

Characteristics of friendships that have been the focus of research in this current literature include friends being a similar age and body mass index and friends having brains that are in synchrony and especially synchrony of alpha waves. In a study entitled "Exploring within – gender differences in friendships using an online social network", homophily was described as people tending to be friends with others who are similar to themselves.[1,2]

In this sample (N= 400,000 online adults), age and body mass index homophily (similarity) occurred in both men's and women's same gender relationships but were more strongly noted in men's same gender relationships. This may relate to men's greater participation in sports where men find friends who are similar in age and body mass index which may contribute to a greater performance match. Surprisingly, homophily in opposite gender relationships was not considered in this study (Table 1).

In research on friends' brains being in synchrony, friends also shared more affect than strangers which may have contributed to their brain synchrony.[3] ERP (evoked response potential or the time it takes for nerves to respond to a stimulus) synchrony was noted between one friend's (the speaker) left prefrontal cortex and the other friend's (the target) left temperoparietal junction. These data were not surprising given that these brain regions have been noted for mentalizing and emotion regulation.

Table 1 Characteristics of friendships (and first authors)

Characteristics	First authors
Homophilia (similarity of age and body mass index)	Pollo
Evoked response potential synchrony	Lin
Prefrontal alpha synchrony	Chen

In another sample, greater emotional synchronization was modulated by relationship quality but only in romantic relationships not in close friendships.[4] In this sample, EEG during non-interactive video-watching suggested not only greater behavioral synchrony but also greater prefrontal alpha synchronization.

Positive effects of friendships

A few positive effects have been noted for friendships. They include physical health, mental health and neuroendocrine health. In a study entitled "Friendship trajectories and health across the lifespan", adults from the Longitudinal Social Relations Study (N= 553, 13 to 77 years-old) were participants.[5]

The sample included only those who reported having a best friend in each wave of the study. Women reported having more positive friendships which may relate to women being generally more expressive or their simply spending more time with their friends. Having positive friendships predicted greater health 23 years later which may relate to their positive friendships being sustained over 23 years (Table 2).

Table 2 Positive effects of friendships (and first authors)

Positive effects	First authors
Greater health	Ajrouch
Greater volume brain regions	Dounbar
Neuroendocrine health	Navyte

In a paper entitled "Why friendships and loneliness affect our health", the optimal number of friends was five.[6] Both the number of friends and loneliness were correlated with the volume of brain regions associated with the default mode network and associated gray matter. The default mode network is a group of interconnected brain regions that are particularly active when a person is not engaged in any specific task focused on external stimuli. It is typically active during rest and during internally-focused thought including daydreaming and

memories of the past or thoughts of the future. It is not surprising that both the number of friends and loneliness correlated with daydreaming and memories of the past. Having more friends would contribute to more memories and loneliness may provide more opportunity for daydreaming

When the type of relationship (family or friends) and closeness of the relationship were compared, the closeness of the relationship had a greater impact on mental health than the type of relationship.[7] That closeness would lead to better mental health is not surprising given that closeness is typically accompanied by comfort/relaxation which would result in lower stress hormones and elevated serotonin (the antidepressant neurotransmitter).

Risk factors/predictors of friendship dissolution

Several risk factors/predictors of friendship dissolution have been recently researched. These include older age, loneliness, depression, aggression, fear of missing out, inappropriate posting online, online friendships, and jealousy (Table 3).

Table 3 Risk factors/predictors of relationship problems (and first authors)

Risk factors/ predictors	First authors
Greater age	Moormann, Augustsson
Loneliness	Lemay
Depression	Moormann
Verbal conflicts	Allen
Fear of missing out (FOMO)	Flack
Inappropriate posts online	Szwedo
Online relationships	Zheng
Younger women	Vaillancourt

In a study entitled "Social isolation in the oldest – old", 35% were said to be isolated from friends (N= 395, mean age=87).[8] The authors reported greater isolation from friends versus family. The greater the age, the greater the isolation from friends and the greater the depression, the greater the isolation from friends. Unless living in a communal setting, the "oldest-old" would likely have less opportunity to meet with friends because of their lesser mobility. Not surprisingly, less isolation was noted in those with greater cognitive function and more activities of daily living. Although those are confounding variables making their relative importance unclear.

In research on friendship across the lifespan (15–97 years old), friendships decreased from young adulthood, plateaued in middle adulthood and decreased in older age.[9] The first developmental decrease noted could relate to young adults spending more time in the workplace. The later decrease in old age could relate to less independence and mobility. Surprisingly, later-born cohorts had more frequent contact with friends, but not in older age.

Loneliness has also undermined friendships in three studies presented in the same paper (N= 1197).[10] In this sample, loneliness was associated with a negative bias in perceiving their friends' regard and care. This negative bias would likely lead to friendship dissolution.

As already noted, depression also undermined friendship as it contributed to isolation in the sample that featured 35% of elderly adults being isolated (mean age=87).[8] Depression could lead to isolation because of rejection sensitivity in the depressed and rejection by the non-depressed.

In a longitudinal study on a sample of adolescents and young adults (N= 154, age range= 13–34), repeated assessments were conducted.[11] Fathers' verbal aggression towards mothers and conflicts between adolescents and close friends predicted verbal aggression in future adult romantic relationships. Although this was a longitudinal study, repeated assessments could have suggested that the verbal aggression continued across time rather than it being predicted from adolescence to adulthood.

A few studies were focused on friendship dissolution risks that involved the internet. These included fear of missing out, inappropriate posting online, online friendships and jealousy.

In one study fear of missing out (FOMO) led to intrapersonal and interpersonal emotion regulation problems, which, in turn, led to problematic social media.[12] In this sample (N=603, mean age= 30) fear of missing out also led to doomscrolling (a form of internet addiction disorder that is focused particularly on negative news on social media). FOMO likely directly led to problematic social media and doomscrolling without a need for the mediating variables of emotion regulation problems.

Inappropriate social media posts from friends during late adolescence have been a predictor of young adult (21-28 years-old) physical health problems.[13] This included sleep problems, problems with physical functioning, BMI, and inflammation based on high levels of the cytokine interleukin-6. The inappropriate social media posts likely continued through the transition from late adolescence to young adulthood. The accompanying stress hormones likely contributed to the sleep and inflammation problems.

In a sample of adolescents (N=2983 14-to 17 years-old), online friendships led to greater loneliness which, in turn, led to poor health and sleep problems.[14] These results were not surprising as a large literature on loneliness associates it with poor health and sleep problems.

In a paper entitled "Social media friendship jealousy", younger women had the highest amount of jealousy.[15] This was associated with lower friendship quality related to internalizing problems. Not surprisingly, these effects were bidirectional and were also associated with anxiety and depression.

Online relationships are not only unhealthy due to isolation and loneliness but also due to sedentary behavior which is also unhealthy but rarely mentioned in this literature. Given the cross-sectional nature of these studies, it's difficult to determine directionality, e.g., excessive social media leading to depression or depression leading to excessive social media? These are more likely reciprocal or bidirectional relationships.

Buffers

The only buffer for friendships that appeared in this literature was internet use by older adults in Asian countries. These were surprising data given that multiple studies had shown internet use as a constraint to friendships. Internet use may have been a buffer for friendships in older adults because they may have relied on online friendships for their convenience. In a study, for example, based on the Chinese Longitude Aging Social Survey, internet use was noted to be negatively related to loneliness (N= 10,126 older adults).[16] As was mentioned previously, online friendships may evolve into offline friendships for older adults.

This happened in a study in Japan. In research entitled "The purpose of internet use and face-to-face communication with friends and acquaintances among older adults" (N= 8735 adults 65 years or older), the Japan Gerontological Evaluation Study data were

analyzed.[17] In this longitudinal database, internet use started with online friendships that led to face-to-face interactions three years later. Although the assessments in this research occurred at one time point and three years later, it is conceivable that the online friendships were sustained across this three year period.

Methodological limitations of this literature

Several methodological limitations can be noted for this current literature on friendships. They can be grouped as they were in the earlier sections of this paper by different categories. These include characteristics, effects, risk factors/predictors, and buffers.

Very few friendship characteristics were explored. A focus on number of friends suggested that five friends were the optimal number. This finding suggests that friends form social networks. Surprisingly, the current literature did not include research on social networks as a context in which friendships have occurred. Characteristics were limited to age and physical similarity and synchrony. Other friendship characteristics were not mentioned such as matching personality type, intellectual level, sense of humor, and different characteristics depending on their same or opposite gender friends.

Very few effects were studied including physical health, mental health, and neuroendocrine health. Surprisingly, cognitive health and emotional health effects were not researched.[18]

Several risk factors/predictors were related to isolation and internet use rather than difficulties making friends. Personality characteristics may contribute to difficulties making friends such as shyness and socially awkward and internalizing behaviors. In several of the studies, it was not clear whether the focus was on isolation related to not having friends or to dissolution of friendships.

Surprisingly, internet use was not only a risk factor/predictor but also a buffer. This was not expected given the multiple studies that focused on internet use as a risk variable, including fear of missing out, inappropriate posting, online friendships, and jealousy in those friendships. Internet use as a buffer, however, was only studied in older adults in Asian countries. Online friendships may be the means for facilitating offline friendships for older adults, as was the case in at least that study in Asian countries.

Surprisingly, no intervention studies appeared in this literature. One might expect that the lack of friends or loss of friends might lead individuals at any age to seek therapy. Despite these limitations, this literature may inform future research of its kind as well as intervention research to help individuals form and maintain friendships.

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Conflicts of interest

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