Social Science & Medicine xxx (xxxx) xxx–xxx

Contents lists available at ScienceDirect

Social Science & Medicine

journal homepage: www.elsevier.com/locate/socscimed

Relationship transitions and change in health behavior: A four-phase, twelve-year longitudinal study

Kim Josefsson[a,*], Marko Elovainio[a,b], Sari Stenholm[c], Ichiro Kawachi[d], Maarit Kauppi[e], Ville Aalto[e], Mika Kivimäki[f,g], Jussi Vahtera[c,h]

[a] National Institute for Health and Welfare, Helsinki, Finland
[b] University of Helsinki, Helsinki, Finland
[c] University of Turku, Turku, Finland
[d] Harvard School of Public Health, Boston, MA, USA
[e] Finnish Institute of Occupational Health, Turku, Finland
[f] Finnish Institute of Occupational Health, Helsinki, Finland
[g] University College London, London, United Kingdom
[h] Turku University Hospital, Turku, Finland

ARTICLE INFO

Keywords:
Finland
Smoking
Alcohol
Physical activity
BMI
Within individual
Marriage
Divorce

ABSTRACT

Rationale: Extensive scientific evidence shows an association between involvement in social relationships and healthy lifestyle. Prospective studies with many participants and long follow-ups are needed to study the dynamics and change in social factors within individuals over time.

Objective: Our aim was to determine whether a change in relationship status (single, married, divorced, widow, cohabiting) is followed by a change in health behavior (smoking, alcohol consumption, physical activity, and body mass index).

Methods: We used data from 81,925 healthy adults participating in the prospective longitudinal Finnish Public Sector Study in the period 2000–2013. We analyzed 327,700 person-observations from four data collection phases. Missing data were multiply imputed. A within-individual methodology was used to minimize the possibility of selection effects affecting the interpretation.

Results: All four health behaviors showed associations with relationship status. The effects were very similar and in the same direction in women and men, although there were gender differences in the magnitudes of the effects. The end of a relationship was followed by a decrease in body mass index, increased odds of being a smoker, increase in physical activity, and increase in alcohol consumption (widowed men). The effects were reverse when forming a new relationship.

Conclusion: A change in relationship status is associated with a change in health behavior. The association is not explained by socioeconomic status, subjective health status, or anxiety level. People leaving or losing a relationship are at increased risk of unhealthy behavior (smoking and alcohol consumption), but at the same time they have a lower BMI and show higher physical activity compared to the time they were in a relationship. It is not clear if the cumulative health effect of these health behavior changes is positive or negative.

1. Introduction

Extensive research has shown that people living in a relationship have lower mortality rates than divorced or single people (Elovainio et al., 2017; Frisch and Simonsen, 2013; Holt-Lunstad et al., 2010; Kiecolt-Glaser and Newton, 2001; Koskinen et al., 2007; Lund et al., 2004; Martikainen et al., 2005; Rendall et al., 2011). Different behavioral, psychosocial, and physiological pathways are likely to explain these findings (Umberson and Montez, 2010). At least five possible mechanisms have been proposed for this phenomenon: social selection, social protection (or social causation), social obligation or norms, social crisis, and the marriage market (i.e. certain behaviors are preferred over others in an ideal wife/husband candidate) (Averett et al., 2008; Williams and Umberson, 2004).

According to the *selection* view, persons with an elevated risk of death due to individual qualities such as unhealthy behavior, low socioeconomic status (SES), or poor health are less likely to enter a relationship and more likely to divorce or separate (Martikainen et al.,

* Corresponding author. National Institute for Health and Welfare, P.O. Box 30, FI-00271, Helsinki, Finland.
E-mail address: kim.josefsson@thl.fi (K. Josefsson).

https://doi.org/10.1016/j.socscimed.2018.03.006
Received 7 March 2016; Received in revised form 16 February 2018; Accepted 3 March 2018

2005). In this view, 1) healthy behaving individuals are considered better marriage partners, 2) the association between relationship status and health is not causal, and 3) the relationship-forming process is seen to favor the healthy.

The *social protection* hypothesis assumes that a relationship in itself is a protective factor due to, for example, increased economic security and social support, which help in maintaining a healthy lifestyle and dealing with stress, leading to lower mortality (Cohen, 2004; Lund et al., 2004; Waldron et al., 1996). Social protection is mostly a direct form of social control where the actions of a person are intended to affect another person (Umberson, 1992). Social support from the significant other can be divided into instrumental support (material aid, such as financial support), informational support (advice and guidance when facing problems), and emotional support (e.g., empathy, caring and trust) (Cohen, 2004; Umberson et al., 2010). Also, as people in a relationship have more material resources than when they are single, it may be easier to make and maintain healthy and possibly more expensive life choices. Protection may also come in the form of spousal supervision, suggestions to go to see a doctor when needed, and discouragement to engage in risky or unhealthy behavior (Averett et al., 2008).

The *social obligation* view suggests that in a relationship, people eat more regularly, choose healthier meals, and due to positive social pressure, follow the health enhancing norms that society tries to promote (Averett et al., 2008; Umberson et al., 2010). Social obligation is an indirect form of social control: a person has internalized certain health norms and self-regulates one's behavior accordingly (Umberson, 1992). A person is probably more likely to work towards quitting smoking if he/she thinks that smoking is a negative form of behavior (Christakis and Fowler, 2008). The hopes and expectations of other people may also be important. Even if a person thinks that there is nothing wrong with smoking, he/she may smoke less around non-smokers who do not want to inhale smoke or who dislike smoking in general. However, it is also possible that social obligations towards the spouse, children, home, and family take away cognitive resources from upholding healthy behavior which may lead to unhealthier behavior (Umberson, 1992).

The *social crisis* hypothesis implies that the observed associations are not explained by the protective aspects of a relationship but by the negative and stressful effects of losing an important relationship such as a divorce (Williams and Umberson, 2004). No benefit would be the normal situation and compromised well-being would be an abnormal temporary situation following a negative social life event.

Finally, the *marriage market* hypothesis suggests that in a relationship people may quit maintaining healthy behavior because maintaining it requires much effort and by being in a relationship they have already achieved their goal in the market. The flipside of the phenomenon is returning to healthy behavior after the end of a relationship to increase one's market value (Averett et al., 2008). It is important to understand that these four explanations are not mutually exclusive, as it is possible that both causation and selection play a role in the link between relationship status and different outcome measures. Different mechanisms may interact and this interaction may explain the phenomenon better than any single mechanism (Rendall et al., 2011; Umberson and Montez, 2010). For example, it is entirely possible that alcoholics do not form relationships as often as others and that, at the same time, people without a drinking problem will drink even less in a relationship.

Our study concentrates on the association between relationship status and health behavior. Health behavior is one of the most important pathways between relationship status and serious health outcomes, including mortality (Mokdad et al., 2004; Stringhini et al., 2010). We use alcohol consumption, body mass index, physical activity, and smoking as health behavior variables because they are some of the most important factors explaining premature mortality and disability (World Health Organization, 2009). The most reliable way of testing this association would be a randomized control trial, but as it is not possible to randomly assign people to different relationship statuses we use observational data to examine within-individual variation over time. We examined whether a change in relationship status predicts changes in health behavior (smoking, body mass index (BMI), alcohol consumption, physical activity) using longitudinal data with four study phases that took place four years apart. Many previous studies have concentrated on single health behaviors. More studies examining several health behaviors in the same study are needed. It is also very much possible that the type of a relationship transition matters. Becoming a widow after a marriage may have different implications than becoming divorced even though losing a relationship is in the center of them both. We included the categories of single, married, cohabiting, divorced/separated, and widowed, and all plausible transitions between these categories.

According to previous research, the end of a relationship reduces BMI and a new relationship increases BMI (Averett et al., 2008; Eng et al., 2005; Jeffery and Rick, 2002; Lee et al., 2005; Mata et al., 2015; Sobal et al., 2003; Syrda, 2017; The and Gordon-Larsen, 2009). The end of a relationship has been found to increase alcohol consumption and being in a relationship seems to decrease it (Dinescu et al., 2016; Eng et al., 2005; Power et al., 1999). Forming a relationship seems to decrease smoking frequency and ending a relationship seems to increase smoking frequency (Christakis and Fowler, 2008; Eng et al., 2005; Lee et al., 2005; McDermott et al., 2009). In a new relationship physical activity has been found to decrease, and the end of a relationship seems to increase physical activity (Eng et al., 2005; Engberg et al., 2012; Lee et al., 2005; Mata et al., 2015). The very limited previous research suggests that relationship transition type may not always be an important factor. For example, a divorce and being widowed seem to produce very similar results (Eng et al., 2005; Lee et al., 2005). More research is needed to fill the knowledge gaps in different relationship transitions. We introduce a wider set of different transitions than in previous studies. Our study included four measurement waves, which is more than in most previous studies. The direction of the aforementioned effects has been similar in men and women. If men have shown an increase or decrease in healthy behavior after a change in relationship status, women have shown a change in the same direction or no change at all. Therefore, possible sex differences in the present study are expected to be in the magnitude of the effects and not in the direction of the effects. There is reason to expect that the effect sizes are bigger for men. In a relationship, women have been shown to control men's behavior more than vice versa (Raitasalo and Holmila, 2005). Also, since women have traditionally been more often responsible for different household chores than men, men may experience the positive sides of a relationship without these stressful negative effects (Umberson and Montez, 2010). In addition, men's emotional needs are usually mostly met by their spouses, whereas women rely much more on their female friends (Vandervoort, 2000). Therefore, forming or ending a relationship could affect men more than women.

2. Method

2.1. Participants

Participants were from the prospective longitudinal Finnish Public Sector study (FPS). The first data collection phase (survey) was conducted in 1997–1998. Additional repeated survey data with 2- to 4-year measurement intervals cover the period from 1997 to 2014. The FPS study consists of all Finnish public-sector employees in 10 towns. All current employees and previous study participants were invited at each study wave. Informed consent was obtained from all individual participants included in the study. The ethics committees of Helsinki University Hospital and the Finnish Institute of Occupational Health approved the study protocol.

The present study contains data from four consecutive study phases