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Does marital status and marital status change predict physical health in older adults?

KATE M. BENNETT*

University of Liverpool, Liverpool, UK

ABSTRACT

Background. Evidence for the effects of marital status and marital status change on physical health is equivocal.

Method. Structural equation models examined whether marital status predicted physical health. Six groups were examined simultaneously: married (M); widowed (W); divorced (D); never married (NM); newly widowed (NW); and newly divorced (ND). There were four annual measures (T1–T4). Both NW and ND were married at T1, but had lost their partners by T2. Four physical health variables were examined: Problems, Limitations, Service use, and Self-rated health (SRH). Age and gender were included.

Results. Previous health predicted future for all measures and for all groups. However, the specific strengths and time-courses varied between marital status groups and between health measures. The most marked patterns were associated with marital status change. Service use was influenced most strongly by NW, whilst Limitations was influenced by ND. Problems distinguished NW and ND from stable marital status groups but also from each other. SRH was influenced by W and not by recent marital status change. The effects of age and gender were modest and restricted to specific health variables and specific marital statuses.

Conclusions. The results demonstrate that marital status and marital status change, in particular, influence health longitudinally. The impact of a change to divorced or to widowed status is not the same. No two health variables responded in the same way, suggesting that marital status has a differential effect on health.

INTRODUCTION

Few studies have examined the relationship between marital status and physical health (Fenwick & Barresi, 1981; Ebrahim *et al*. 1995). However, this relationship should not be overlooked since recent research indicates that marriage exerts a protective effect on mortality, service use, and that a change from married to unmarried status was associated with an increase in negative health behaviours (Umberson, 1992; Mineau *et al*. 2002; Iwashyna & Christakis, 2003).

* Address for correspondence: Dr Kate M. Bennett, School of Psychology, University of Liverpool, Eleanor Rathbone Building, Bedford Street South, Liverpool L69 7ZA, UK.
(Email: kmb@liv.ac.uk)

To identify precisely the health effects attributable to marital status one needs to compare across marital statuses and to include participants whose status changes. One can thus distinguish effects associated with recent or past partner loss and with specific marital statuses. The literature review will focus solely on such studies. Fenwick & Barresi (1981) examined self-rated health with several marital statuses: married at T1, lost partner by T2; newly married between T1 and T2; never-married; already lost spouse at T1. They found declines in self-rated health for those who lost their spouse between T1 and T2, but not for the never-married, thus concluding that the declines were due to marital status change. Using similar categorizations, Umberson (1992) found that

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the transition from married to unmarried status was associated with negative health behaviour. In both, a confound was introduced by collapsing divorced and widowed into a single category of 'unmarried', therefore, one cannot identify whether different transitions exert differential effects.

Designs, therefore, need both baseline and post-event measures of health status separately for newly widowed and divorced. Ebrahim *et al.* (1995) examined mortality in middle-aged British men, comparing those who became divorced or widowed with those who remained married. They found increased cardiovascular disease mortality amongst the recently divorced. Prigerson *et al.* (1999) examined women who experienced marital dissolution and found that widowhood was associated with poorer health but not with greater health service use. Joung *et al.* (1998) examined marital status change and gender. They conducted analyses of divorce and widowhood, to determine whether health predicted marital status transition. Those who became divorced had more subjective complaints and/or more chronic health conditions than those who remained married. This provides evidence for the health selectivity theory of divorce (Goldman, 1993).

These studies shed light on the impact of marital status transition on health but leave outstanding methodological issues. First, they did not compare marital change groups with already divorced, already widowed and never married. Yet, it is important to determine whether there are shared experiences between those who are already widowed or divorced and those who have recently become widowed or divorced. It is important to determine whether there is an effect of living alone, which newly divorced and newly widowed people might share with those who have always lived alone. By including several groups one can distinguish effects attributable to change, shared status, and to the absence of a spouse.

Second, gender has not be examined in much detail, and yet, there is equivocal evidence suggesting that gender influences separately: gender and health (see Arber & Cooper, 1999 for a review); gender and marital status (Hammond & Muller, 1992; Stroebe *et al.* 2001); health and marital status (Cramer, 1993). Thus it is important to include gender as a variable in any analyses of marital status and health.

Third, age has not been examined in much detail in this context either, although its effects on health are well known (Victor, 1991).

Fourth, rarely have there been more than one post-measure of health, thus it is not possible to examine the time-course of the effects of marital status change. There is evidence from studies of psychological wellbeing that changes occur over time following marital status change (Bennett, 1996), and this might be true for physical health.

This study addressed these issues. Four stable marital status groups and two marital status change groups were compared within a simultaneous single model, with one pre-change measure, and three post-change measures, with age and gender as covariables. Four health measures were examined. The two objective health measures were number of health problems and limitations a participant experiences. The health behaviour was the number of health services used. The subjective health measure was self-rated health (SRH). This measure not only serves as a global measure of physical health but also as a proxy for psychological wellbeing (Deeg & Bath, 2003). Although the British Household Panel Survey (BHPS, 2003) (from which the current data are taken) has a measure of psychological wellbeing (General Health Questionnaire; Goldberg, 1978) these data have been presented elsewhere (K. M. Bennett, unpublished observations).

This paper addresses five questions: does prior health predict future health? If so, does marital status predict the longitudinal pattern of health? In which ways is marital status influential? Does marital status change have a specific influence in these relationships? Do gender and age contribute to the predictions of health outcomes?

METHOD

Participants

Data were taken from the BHPS, an annual survey of each member of a nationally representative sample of 5000+ households. The same individuals are re-interviewed annually. The sample has remained representative of the population of Britain since the 1990s. Of

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Table 1. *Means* [*standard deviations* (*S.D.*)] *for Age, Problems, Limitations, Service use and Self-rated health by marital status and gender*

		Age (yr)	Problems	Limitations	Service use	Self-rated health
Marital status	Gender	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)
Married (M)	Men	65·05 (6·60)	1·36 (1·11)	0·56 (1·01)	0·30 (0·52)	0·30 (0·52)
	Women	63·12 (6·08)	1·27 (1·14)	0·51 (1·01)	0·35 (0·52)	0·35 (0·52)
Widowed (W)	Men	74·64 (6·94)	1·54 (1·26)	0·63 (1·16)	0·37 (0·60)	0·37 (0·60)
	Women	71·24 (7·29)	1·71 (1·26)	0·69 (1·24)	0·53 (0·64)	0·53 (0·64)
Divorced (D)	Men	52·80 (11·10)	1·18 (1·24)	0·58 (1·08)	0·28 (0·51)	0·28 (0·51)
	Women	51·54 (11·75)	1·32 (1·27)	0·69 (1·29)	0·44 (0·64)	0·44 (0·64)
Never married (NM)	Men	65·23 (6·08)	1·18 (1·06)	0·91 (1·34)	0·28 (0·56)	0·28 (0·56)
	Women	68·48 (7·86)	1·70 (1·22)	0·73 (1·25)	0·63 (0·62)	0·63 (0·62)
New widowed (NW)	Men	71·80 (9·03)	1·45 (1·27)	0·73 (1·21)	0·63 (0·67)	0·63 (0·67)
	Women	68·81 (9·62)	1·40 (1·09)	0·77 (1·21)	0·51 (0·65)	0·51 (0·65)
New divorced (ND)	Men	50·91 (12·34)	0·93 (1·24)	0·37 (0·93)	0·48 (0·61)	0·48 (0·61)
	Women	49·97 (9·39)	1·36 (1·66)	0·73 (1·31)	0·43 (0·58)	0·43 (0·58)

relevance to the current study the BHPS provides information on both health and marital history (Taylor *et al.* 2003).

Sampling

Selection was confined to participants aged >40 years in order to focus on older adults. To maximize the sample size data were pooled from across all waves in a manner similar to that of Williams & Umberson (2004). All those who had been married at the first point of time and newly divorced by the second point of time, and who maintained that status for the following 2 years were selected (ND) ($n=72$, mean age = 50.4). The newly widowed were selected in the same manner (NW) ($n=171$, mean age = 70.3). All participants who maintained the same status over 4 years (from the first wave of the BHPS) were selected from each of the following: married (M) ($n=904$, mean = 64·1); widowed (W) ($n=367$, mean age = 72·9); divorced (D) ($n=242$, mean age = 52·2); and never-married (NM) ($n=111$, mean age = 66·9). Table 1 shows the distribution of marital status by gender for health and age at baseline.

Measures

Health problems (hereafter Problems) were assessed by 13 items, including problems with: arms, legs, sight, chest/breathing, heart/blood pressure, stomach/indigestion. The question asked whether a respondent suffered from a particular health problem (no = 0, yes = 1) with a maximum of 13 indicating poor health.

Health limitations (hereafter Limitations) were assessed using six questions of the form 'does health hinder': doing the housework, climbing stairs, getting dressed, walking more than 10 minutes, type or amount of work (no = 0, yes = 1) with a maximum of 5, indicating high levels of limitations.

Health/Welfare service use (hereafter Service use) was assessed by how many of 12 health/welfare services were received including: health visitor, home help, and physiotherapist (no = 0, yes = 1), with a maximum of 12. This total was square root transformed to normalize the data (skew before transformation = 2·191, after transformation = 0·993).

SRH was assessed by the following question, 'In the last 12 months, compared to people of your own age would you say that your health has on the whole been excellent (score 1) to very poor (score 5).'

Respondents' age was taken from the age they were, or would be, on 1 December in the year they were selected for this study, ensuring comparability between waves. Gender was included.

Analyses

ANOVAs for five baseline measures were conducted to establish group differences in age, Problems, Limitations, Service use, and SRH. Marital status and gender were the independent variables. *Post-hoc* analyses were conducted where required.

The principal modelling analysis was conducted with multi-sample nested structural

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Table 2. *Analysis of variance of baseline Age, Problems, Limitations, Service use and Self-rated health*

	Gender main effect			Marital status main effect			Gender × marital status interaction		
Variable	*F*	df	*p* <	*F*	df	*p* <	*F*	df	*p* <
Age	5·05	1, 1857	0·03	208·58	5, 1857	0·001	2·818	1, 1857	0·02
Problems	4·78	1, 1827	0·03	3·14	5, 1827	0·01			
Limitations			N.S.			N.S.			N.S.
Service use	4·97	1, 1833	0·03	5·55	5, 1833	0·001	2·43	5, 133	0·03
Self-rated health			N.S.	3·59	1, 1846	0·003			N.S.

equations using EQS (Multivariate Software Inc., Encino, CA, USA). This technique permits the simultaneous comparison of a single model across groups to determine whether or not the groups come from the same population. The analysis provides fit statistics for the overall model and for individual parameters within each group. Theoretically, it might be expected that different groups will come from similar populations because they share similar gender and age profiles. However, this may not be the case because of the influence of marital status on health over time. For each health variable a nested model was tested reflecting the influence of marital status, using a four-step modification process. Each stage in the modification model was compared with the previous stage using the χ^2 goodness-of-fit test. The dependent variables are health at Time 1 (T1), Time 2 (T2), Time 3 (T3) and Time 4 (T4), where T1 is before marital status change and T2–T4 are taken after the status change. Age and gender were the independent variables. The details of the modelling process are presented in the Technical Appendix which appears on the Journal's website. For simplicity the first model and the final best-fitting model are described here. The outcome measure, Problems, is used for illustration. The initial model was a multi-sample model whereby age and gender predicted Problems at T1, which predicted Problems at T2, which predicted Problems at T3, which predicted Problems at T4. Paths were also included between groups T1–T3, T1–T4, and T2–T4, to identify the effects of marital status change (see Fig. 1). This model assumed that Problems were influenced differentially by marital status. The best model identified which paths in the model differed between, or were similar across, the different marital status groups.

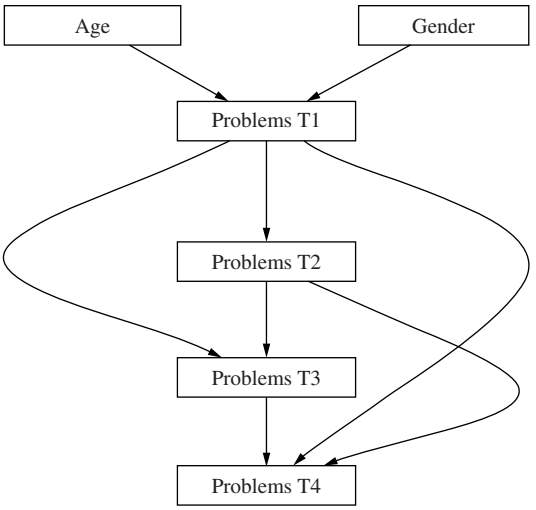


FIG. 1. The hypothesized model illustrated with health problems.

For simplicity two fit indices are reported here: Comparative Fit Index (CFI), and χ^2 (four are presented in the Technical Appendix). To indicate a good fit the CFI should be $\geqslant 0{\cdot}9$, and ideally $\geqslant 0{\cdot}95$. A non-significant χ^2 indicates a good fit, although with large sample sizes this often is not achievable (Maruyama, 1998).

RESULTS

Table 2 shows the results for the ANOVA main effects and interactions for Age, Problems, Limitations, Service use and SRH. For Age there was a significant main effect for Gender: the women participants were younger (see Table 1). There was a significant main effect for Marital Status: ND were the youngest, and groups increased in age thus D, M, NM, NW

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Table 3. *Showing models with fit indices*

	Model	χ^2	df	*p*	CFI
Problems	1	39·5	36	=0·32	0·999
	5	61·6	68	=0·70	1·00
Limitations	1	73·5	36	<0·001	0·98
	5	109·9	68	<0·001	0·991
Service Use	1	92·5	36	<0·001	0·949
	5	137·3	68	<0·001	0·972
Self-rated health	1	48·2	36	=0·08	0·996
	5	85·2	70	=0·01	0·995

CFI, Comparative fit index.

and W. There was a Marital Status × Gender interaction. M and W men were significantly older than women from the same Marital Status groups, whilst NM men were significantly younger than women [$t(905)=4·53$, $p=0·001$; $t(365)=3·31$, $p=0·001$; $t(109)=2·32$, $p=0·022$ respectively].

For Problems and Service use there were Gender main effects: women reported more Problems than men, and women reported a greater use of services than men. There were no significant Gender effects for SRH or Limitations. There were Marital Status main effects for Problems, Service use and SRH. *Post-hoc* analyses showed that W had significantly more Problems than M, D or ND (Tukey HSD $p<0·001$, $p<0·001$, $p<0·021$ respectively). *Post-hoc* analyses also showed that M used fewer services than W, D or NW (Tukey HSD $p<0·001$, $p<0·05$, $p<0·001$ respectively). SRH was poorer for W and D participants compared with M (Tukey HSD $p<0·014$, $p<0·012$ respectively). Service use showed Gender x Marital Status interactions such that NM women reported significantly greater Service use than NM men [$t(109)=2·94$, $p=0·004$].

Modelling

Simplified modelling results are presented in the text. Information concerning direct and indirect effects, the size of coefficients and additional fit indices are presented in the Technical Appendix. Table 3 shows the fit indices.

Problems

Although the initial model, which allowed all paths to vary freely between groups was a good fit, the fit remained good when both differences and similarities across groups were permitted in the final model. All direct Health–Time pathways were significant. The results showed that Problems were more strongly predicted between T1–T2 by D and ND than by other marital status groups. NW provided a stronger prediction between T1–T3 and T3–T4, but weaker between T2–T3. The Age–T1 relationship was non-significant for NM and NW and the Gender–T1 pathway was significantly stronger for NM than for other groups.

Limitations

The initial model was a good fit. However, the final model remained a good fit whilst allowing for identification of similarities and differences between marital status groups. All direct Limitation–Time pathways were significant. D and NM predicted more strongly Limitations between T1 and T2 than other groups. ND more strongly predicted T4 from T1 than other groups. There were small significant differences between groups for Age–T1 with W and D showing a stronger effect than the other groups. However, there were no group differences for Gender–T1, nor were these significant.

Service use

The initial model was found to be a good fit, as was the final model. All direct Service use–Time pathways were significant. W, NM, NW and ND at T1 all predicted T2 more strongly than M and D, with ND providing the strongest prediction. T2 predicted more strongly T3 for NM and NW than the other groups. In addition, NW at T2 predicted T4 more strongly than the others. The Age–T1 relationship was stronger for W than for others. There were no differences between groups for Gender–T1.

SRH

The initial model was a good fit, as was the final model. All direct SRH–Time pathways were significant. W predicted more strongly T1–T3 and T1–T4 than the other groups, and less strongly T2–T3. The relationships between Age and T1 for D and NM were significantly stronger than for the other groups. There were no differences between the groups for Gender–T1.

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DISCUSSION

Five questions were addressed. First, does prior health predict future health? The results show this to be so for all four health variables: Problems, Limitations, Service use, and SRH; this pattern remains significant across the time-course of this study. Second, does marital status predict the relationship between prior and future health? This was confirmed; no two marital status groups responded in the same way across health measure or time-course. Third does marital status change exert a particular influence? Marital status change had a marked influence on health and time-course. However, NW and ND differed from each other in their responses. The final question asked whether gender and/or age contributed to the predictions of health outcomes? The results indicated that these effects were specific to individual health variables, and to individual marital status groups.

Health variables did not respond in the same way to different stable marital statuses. Service use distinguished W and NM participants from the other stable statuses between groups T1–T2. For SRH only W differed from M, but for relationships between bi- and tri-annual and not annual relationships. This illustrates a dissociation in the time-course, whereby the relationship is stronger for the T1 predictions than for the other groups, and weaker for the T2 prediction. Problems distinguish D from the other stable groups between T1 and T2 with a stronger relationship. Finally, Limitations distinguish D and NM from the other stable groups, again between T1 and T2. There is also an unexpected negative relationship for D between T1 and T4, which although significant is weaker than others. However, one finding is consistent across all the health variables; married status acts as the normative status. These results are in agreement with other evidence that marriage can be considered the normative status (Cramer, 1993).

The findings for the stable marital statuses are important for several reasons. They show that marital status does not influence health in a uniform way. Whilst the majority of differences lie between groups T1–T2, suggesting an early influence on health, both SRH and Limitations also demonstrate longer term dissociations indicating a nonlinear course. Married status represents the normative status in its responses to health across the board.

A key issue was the influence of marital status change on health over time. All but one health variable were influenced by marital status change: Problems, Limitations, and Service use. However, NW and ND differed in their responses. For Problems between groups T1–T2 the relationship was stronger for ND when compared with NW whose association was the same as for M. This suggests that the impact of divorce on Problems occurs at the point of divorce. However, for NW, the impact occurs later between groups T2–T3. A change to widowed status reduces the impact of T2–T3, but increases the relationship between groups T1–T3. This indicates that there is a dissociation which occurs between T2 and T3. There is also a further increased association between T3 and T4 suggesting that the influence of recent widowhood continues for at least 3 years. Thus, Problems impact at different times for different status changes. Interestingly, there were no baseline (T1) differences in Problems for either ND or NM when compared with M participants. This demonstrates that the effects are due to marital status change, rather than the cause of change, providing support for both Prigerson *et al.*'s (1999) and Ebrahim *et al.*'s (1995) work but not for health selection (Joung *et al.* 1998).

The effects of marital status change on Limitations are confined only to ND. The relationship between T1 and T4 is greater than for others. This means that more Limitations at T1 predict more Limitations at T4. Although there was a weaker relationship between T2 and T4, some of the explanation for this is likely to be derived from the stronger relationship between T1 and T2.

Turning to Service use, which may be considered a mediating variable, one finds that it is influenced differentially by changes to D and W status. The two new statuses show some similarities in the T1–T2 prediction, such that they have stronger influences that the normative, with the association being stronger for ND. Between T2 and T3 the association for NW is stronger when compared to the other groups (with the exception of NM), and it is also stronger between T2 and T4 than for any

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other group. This suggests that previous Service use is likely to predict future Service use more strongly for NW. It would be interesting to examine Service use controlling for Problems but this is outside the scope of this paper.

For a brief discussion of indirect effects see the Technical Appendix.

In general, gender did not differentiate marital status and its influence was small, with women having poorer health than men. However, for Problems there was a difference between groups. For NM the relationship between Gender and T1 was significant and substantial. As one would expect women reported significantly higher numbers of Problems than men (Victor, 1991; Umberson, 1992). However, it is surprising that it is confined only to Problems and only to NM. One would have expected more general effects which would extend, at least, to Limitations (a proxy for disability) (Victor, 1991). Thus, is there something about never having a partner which makes women vulnerable to Problems in a manner that does not apply to men? Further research is needed to answer this question.

Age as a predictor of health at T1 also produced some significant results. Although the strength of the relationships remained small it was generally in the direction that the older a person was the poorer the health. With respect to Problems, the relationship for NW was non-significant, in the case of NM it was also non-significant but in the opposite direction, that is the younger a person was the more Problems a person had. For Limitations being W or D showed a greater effect than for the other groups, that is the older the person was the more likely they were to have Limitations. For Service use there was a small but stronger association for W: the older a participant was the more services s/he used. Finally, for SRH, whilst the general relationship was non-significant, for D it was significant, whereby the older a person was the poorer his/her SRH was. On the other hand for NM the younger a person was the poorer his/her SRH was likely to be. These results demonstrate that age has a role to play in understanding the relationships between health and marital status, albeit a small one.

To summarize, this study found differential health effects of marital status change, with ND and NW having greatest impact. There were differential effects of marital status on the specific health measures, on the strength, direction and time-course of the effects. Age was an important covariable, whilst gender was more restricted in its impact.

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DECLARATION OF INTEREST

None.

NOTE

A Technical Appendix accompanies this paper on the Journal's website (http://journals.cambridge.org).

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