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Exploring personal interests of physicians in hospitals and specialty clinics

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ABSTRACT

Physicians' interests substantially influence intra-organizational dynamics in hospitals, though little is known about the actual content and structure of these interests. The objective of this study was to both identify and build a structured model of physicians' interests. Based on literature and 27 semi-structured interviews with physicians, a questionnaire containing 10 interests was developed. Next, 1475 physicians in the Netherlands filled out an online survey. Analyses of the data revealed a distinction between the primary interest of 'helping patients as well as possible' and nine secondary interests. Factor analysis identified the main secondary interest dimensions as work-related, setting-related, and life-related. Value attached to interests differs between specialties and types of hospitals. The influence of hospital type on the value attached to interests is stronger than the influence of specialty group on the value attached to interests. Insight in the relative importance of different interests may help policy-makers make decisions that foster shared interests.

Introduction

The significance of interests held by organizational members (Bidwell, 2012) in shaping intra-organizational dynamics and organizational responses to institutional pressures for change cannot be overemphasized (Greenwood & Hinings, 1996; Kim, Shin, Oh, & Jeong, 2007; Koelewijn, Ehrenhard, Groen, & van Harten, 2012).

According to Greenwood and Hinings (1996), interests will provide arenas for conflict as groups holding different interests will attempt to promote their own interests through power relations. Although Kikulis, Slack, and Hinings (1995) have argued that this interaction deserves special attention, the extent and implications of the role of organizational members' interests in shaping responses to conflicting institutional pressures remains poorly understood (Jarzabkowski, Matthiesen, & Van De Ven, 2009; Kraatz & Block, 2008; Kraatz & Moore, 2002).

In addition to the presumed influence of interests, the exploration of the concept of interests itself has not received a great deal of attention from an intra-organizational perspective either. Instead, the few studies covering interest-related issues in healthcare focus on the causes and consequences of conflicts of interest from an inter-organizational or even inter-industry perspective (Brennan et al., 2006; Rodwin, 1993). As a result, the influence of interests from an intra-organizational perspective remains unclear.

In our effort to define interests from an intra-organizational perspective, we adopt the neo-institutional framework of organizational change as developed by Greenwood and Hinings (1996). They define the concept of interests in terms of organizational members' orientation and their motivation to maintain and enhance their sectional claims. Sartori (1970) acknowledges the political struggle resulting from the competing interests of organizational members and defines these interests as what an actor values in terms of ultimate outcomes. In addition, Thompson (1993), distinguishes between primary interests, which for physicians imply the health of patients, and secondary interests, which may include financial gains or a desire for power. Hall, Dugan, Zheng, and Mishra (2001) define secondary interests that include economic, professional, and personal interests. In conclusion, we define interests as primary or secondary outcomes valued by organizations, groups or individuals.

Summarizing, as interests are considered to be highly influential in shaping intra-hospital dynamics (Covaleski & Dirsmith, 1988; Powell & DiMaggio, 1991), we focus our study on the identification

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and analysis of the interests of physicians working in diverse specialties and different types of hospitals. We aim to contribute to the understanding of scholars, hospital managers, and physicians about both the nature and the structure of physicians' interests. This will provide a framework that can improve decision-making processes in both hospitals and specialty clinics. To achieve this, we first derived a list of 10 interests by drawing from both theory and interviews with physicians. Next, we applied systematic exploratory and confirmatory factor analyses to produce a structural model of physicians' interests. Finally, we used univariate and post-hoc analyses of the standardized factor loadings to assess differences between specialty groups and types of hospitals.

Methods

Study design

We first refined and extended previous work (Berkowitz, Fraser, Treasure, & Cochran, 1987; McMurray, Kirk van, & Linzer, 1997; Williams et al., 1999; Zazzali, Alexander, Shortell, & Burns, 2007) to produce a measure of eight interests indicated by an asterisk applicable to physicians across many specialty groups and types of hospitals. Next, we tested this initial list of eight interests during semi-structured interviews held to elicit the interests of the participating physicians. In total 27 physicians participated, of whom 15 were working in hospitals and 12 in specialty clinics. During the interviews, we first asked our respondents for their present interests to avoid leading them in a particular direction. Next, we combined their responses with the initial list of eight interests, which resulted in a list of in total 12 interests held by physicians in hospitals. However, we decided to remove two of these interests from the final list: First, 'a nice working climate' was mentioned though explicitly linked to the interest 'deciding for myself which employees work for me' in which colleagues are included. Second, as 'opportunism' was mentioned as an interest held by other physicians and not by physicians themselves, we decided to exclude it. Finally, 'specializing further' and 'deciding for myself which employees work for me' were added to the final list depicted below:

1. Helping patients as well as possible*
2. A good income*
3. Variety in my work as a physician*
4. Specializing further
5. Deciding for myself which employees work for me
6. Working with the best facilities*
7. Being able to do my work autonomously*
8. Having a say in hospital policy*
9. Doing research*
10. A good work-life balance*

Respondents received a personalized invitation by e-mail to increase the response rate. As part of the questionnaire, we explained that these interests were derived both from literature and previous interviews with medical specialists. In addition, we mentioned that questions regarding these interests focused on their current preference given their present situation and experienced dependencies. Finally, respondents were promised strict confidentiality to prevent a potential bias caused by socially desirable answers.

For the purpose of our study, we applied a self-explicated method similar to that used by Chen, Ali, and Veeman (2002). Accordingly, we developed two specific tests of the concordance of interests, one focusing on the ordinal aspect of the value attached to an interest, and one comparing the cardinal aspect of the value attached to an interest.

For the cardinal ranking method, all participants were asked to first rank a single interest in relation to the other nine interests, from most important to least important thereby reflecting their current preference. Then participants were asked to rate the importance of each interest in their present situation on a 5-point Likert scale ranging from "very unimportant" (1) to "very important" (5). Three measures of value were derived from these data: a ranking measure rated from most important (10) to least important (1); a rating measure ranging from very unimportant to very important; and a self-explicated measure which we used in our analyses, given by the product of the rating and ranking measures and consequently ranging from 1 to 50.

Before using the list in a survey among a large sample of physicians in the Netherlands, we first performed a psychometrical test including analyses of skewness, non-response and correlation, among 30 physicians in a general hospital to ensure the validity of our results. After this validation we started the large-scale survey across hospital types and specialty groups.

With respect to hospitals we distinguish between general hospitals, large teaching hospitals, academic hospitals, specialist hospitals and specialty clinics. General hospitals offer a broad range of basis care sometimes added with a few of top-reference clinical functions. Large teaching hospitals offer next to basis care also a broad range of top-reference care, in addition to providing education to students of medicine in which the function as satellites of academic hospitals. Academic hospitals provide next to basis to top-reference care, a 'last resort' function for patients with complex healthcare issues. In addition they bear responsibility for providing basic medical training and play a major role in the continuing education of medical specialists. Finally, specialty clinics offer basic care, mostly centered around one or two specialties.

In terms of specialty groups we distinguish between support specialties including microbiology, pathology and anesthesia, surgical specialties including orthopedics and cardio surgery and medical specialties including amongst others; internal medicine and pediatrics.

Data obtained from the questionnaire

The data collection was undertaken from June to mid-July 2012. For the large-scale survey, we sent an invitation by e-mail to a large sample of 7913 physicians in the Netherlands working in a hospital or specialty clinic, inviting them to fill out our online survey. Two reminders were sent to those who had not yet filled out the survey. In total, 18.6% filled out the questionnaire completely ($n = 1475$), which is a somewhat higher response compared to earlier surveys by Kruijthof (2005) and Klopper-kes, Meerdink, Wilderom, and Van Harten (2011).

Ethics approval

For our research no ethics approval was required. In The Netherlands, ethics approval of research is necessary under the Medical Research Involving Human Subjects Act and/or the Embryos Act (WMO) when it concerns clinical trials in which persons are subjected to treatment or are required to behave in a certain manner.

Descriptive statistics and assessment of the model

First, as part of our descriptive analysis, a correlation matrix was created, showing the descriptive associations between interests as an indication of covariance and the interdependence of individual interests.

Next, the associations between the different interest dimensions were assessed. To do this, we applied a systematic procedure in

which each step built on the previous steps, using progressively more sophisticated statistical methods. This enabled us to test a structural model while assuring good validity and reliability (Asparouhov & Muthen, 2009; Donabedian, 1988; Marsh et al., 2009). The software programs of Mplus 6.12 and SPSS 20.0 were used for these analyses.

After controlling for multicollinearity and univariate normality described in Appendix A, an exploratory factor analysis (EFA) was conducted on a subset of 50% of the respondents to identify the optimal loading of interests on increasing number of factors and remove variables that did not load significantly onto their intended factor (loading $< .300$, $\alpha = .05$). A four-factor model gave an optimal model fit between the interests and the number of factors. A description of our exploratory factor analysis (EFA) can be found in Appendix A.

Finally, a confirmatory factor analysis (CFA) was conducted on the full dataset, containing all respondents, to analyze whether the variables reflected their intended factors and whether the factors could be separated from one other. In CFA, variables are only allowed to load onto the factors specified by the researcher, based on the earlier exploratory factor analysis (EFA).

We checked the model fit indicators when assessing both the EFA and CFA. A good model fit is indicated by a low root mean square error of approximation (RMSEA $< .08$) combined with a non-significant p-value ($p > .05$), and by a high comparative fit index (CFI) and Tucker-Lewis index (TLI) both close to 1.00 (Kline, 2011). A good model fit means that the model predictions and the dataset do not differ significantly (Hair, 2010).

Finally, the resulting model was analyzed to assess differences between groups of specialties and types of hospital. In the Results section, we will present the findings of the analyses.

Results

In total, 1472 respondents filled out the questions regarding their interests. Their characteristics are summarized in Table 1. We compared our sample in terms of the number of physicians per specialty group, age, and sex with population data available from the official individual registration of healthcare professionals in The Netherlands (in Dutch: BIG-register). Based on these analyses, we concluded there were no significant differences between the population statistics for physicians in the Netherlands, and the sample statistics for our survey.

Table 1
Respondents' characteristics.

	Percentage
Gender	
Men	71%
Women	29%
Age distribution	
<35	10%
35–39	16%
40–44	13%
45–49	13%
50–54	19%
55–59	17%
60–65	12%
Specialty group	
Medical specialties	49%
Surgical specialties	29%
Support specialties	22%
Hospital type	
General hospitals	29%
Large teaching hospitals	43%
Academic hospitals	22%
Specialist hospitals	2%
Specialty clinic	3%

Descriptive presentation of interest scores

First, we analyzed the outcomes using descriptive statistics. Table 2 shows the means, standard deviations and correlations of physicians' interests. 'Helping patients as well as possible', 'a good work-life balance' and 'a variety in my work as a physician' are considered most important. 'Doing research', 'deciding for myself which employees work for me' and 'specializing further' are considered least important.

The correlations between interests varies from close to zero between 'helping patients as well as possible' and 'doing research' ($r = .002$, n.s.) to a medium-sized correlation between 'deciding for myself which employees work for me' and 'having a say in hospital policy' ($r = .507$, $p < .01$). A significant negative relationship was found between 'a good income' and 'doing research' ($r = -.102$, $p < .01$), and between 'a good work-life balance' and 'doing research' ($r = -.055$, $p < .05$).

Confirmatory factor analysis (CFA)

After the EFA based on 50% of the respondents, we analyzed both the four-factor model and a three-factor model containing only the secondary interests by performing a confirmatory factor analysis on the full dataset.

The four clusters of interests that are derived from this analysis are labeled as follows:

(1) *Mission*, a primary interest, based upon a single item, helping patients as well as possible. Next, three secondary interest dimensions are distinguished:
(2) A *work dimension:* a secondary interest that is a combination of 'variety in my work as a physician', 'specializing further' and 'doing research';
(3) A *setting dimension:* a secondary interest that covers 'deciding for myself which employees work for me', 'working with the best facilities', 'being able to do my work autonomously' and 'having a say in hospital policy'.
(4) A *life dimension:* a secondary interest consisting of 'a good income' and 'a good work-life balance'.

Based on the robust maximum likelihood estimator (MLM), the four-factor model containing both primary and secondary interests gives a mediocre fit to the data: $N = 1780$, χ^2 (df) = 225.208 (33), $p = .0000$, RMSEA = .057, CFI = .901, TLI = .865. This is caused by the presence of a single observed item of the primary interest being treated as a latent variable. As two items per factor is considered the minimum for identification (Kline, 2011), we will exclude 'Mission' as it consists of a single item.

The fit for the three-factor model containing secondary interests and excluding 'Mission' is better than for the four-factor model: $N = 1780$, χ^2 (df) = 127.139 (24), $p = .0000$, RMSEA = .049, CFI = .944, TLI = .916.

Concluding, the confirmatory structural equation modeling analysis confirmed the earlier EFA while grouping interests in both primary and secondary interests.

Principal interests of specialty groups and types of hospital

Next, we assessed the overall scores for the different interest orientations across specialty groups and hospital types as depicted in Table 3.

Table 2
Means, standard deviations and correlations of interests.

Interest	Mean	SD	1	2	3	4	5	6	7	8	9	10
1. Helping patients as well as possible	45.38	7.87	–									
2. A good income	24.27	11.53	.067**	–								
3. Variety in my work as a physician	27.54	11.32	.089**	.003	–							
4. Specializing further	18.09	12.16	.012	−.004	.193**	–						
5. Deciding for myself which employees work for me	14.38	11.56	.027	.197**	.108**	.204**	–					
6. Working with the best facilities	24.44	12.37	.168**	.132**	.111**	.212**	.442**	–				
7. Being able to do my work autonomously	25.40	13.44	.023	.210**	.035	.025	.389**	.223**	–			
8. Having a say in hospital policy	19.58	12.09	.087**	.206**	.093**	.099**	.507**	.353**	.348**	–		
9. Doing research	13.03	12.75	.002	−.102**	.095**	.333**	.130**	.184**	−.015	.075**	–	
10. A good work-life balance	30.76	14.00	.113**	.177**	.058*	−.005	.080**	.054*	.052*	.070**	−.055*	–

**Correlation is significant at the .01 level (2-tailed).
*Correlation is significant at the .05 level (2-tailed).

Table 3
Estimates, standard error and *p*-value for the observed variable (mission) and latent variables (work, setting, life).

	Estimate	SE	Est/SE	Two-tailed *p*-Value
Primary interest				
Mission	45.431	0.186	244.843	0.000
Secondary interests				
Work	27.551	0.269	102.369	0.000
Setting	14.343	0.275	52.219	0.000
Life	24.257	0.273	88.786	0.000

Table 4
ANOVA and post-hoc test for primary interest by specialty group and hospital type.

Variables	Mission	
	X	(SD)
Specialty group		
Medical	45.5[2]	(7.7)
Support	44.0[13]	(9.4)
Surgical	46.2[2]	(6.6)
p Value	<0.00	
Hospital type		
General hospitals	45.7	(7.6)
Large teaching hospitals	45.8	(7.3)
Academic hospitals	44.5	(9.0)
Specialist hospitals	45.0	(7.5)
Specialty clinic	43.5	(9.3)
p Value	0.53	

[123]Significantly different from group mentioned.

Mission is valued highest, which corresponds with its position as primary interest. Among the secondary interests, work-related interests are valued higher than life and setting interests.

To assess the differences between specialties and types of hospital, we performed separate univariate analyses (ANOVAs) for both the primary and secondary interests. In addition, we compared the means or mean standardized factor loadings in SPSS by applying the Games-Howell post-hoc test. This test was used because of large differences in sample size between hospital types and in variances across factors (Field, 2009).

For the primary interest of helping patients, we analyzed the mean scores for the different specialties and types of hospital as presented in Table 4. Interestingly, helping patients was valued least by physicians in support specialties and most in surgical specialties to medical specialties. Although we found no significant differences in the value attached to helping patients between types of hospital, the scores suggest that physicians working in specialty clinics may attach lower value to this interest compared to physicians working in large teaching hospitals.

Secondary interests

To determine differences in scores between specialty group and type of hospital, we calculated the weighted sum scores in Mplus (DiStefano, Zhu, & Mindrila, 2009). Mplus uses regression analysis to determine the contribution of each factor score to factor loadings. Here, factor scores were fixed at 0 and variance was fixed at 1 to obtain a standard normal distribution, allowing comparison between the factor loadings of specialty groups or type of hospital. The results are shown in Table 5.

Table 5
ANOVA and post-hoc test based on mean standardized factor loadings for secondary interests by specialty group and hospital type.

Factors	Constructs						
	n	Work		Setting		Life	
		M	(SD)	*M*	(SD)	*M*	(SD)
Specialty group							
1. Medical	873	−.0076[23]	(.73)	−.0315[3]	(.86)	−.0745[23]	(.71)
2. Supportive	396	.1190[13]	(.79)	.0929[3]	(.90)	.0615[1]	(.74)
3. Surgical	510	−.1362[12]	(.74)	−.0493[12]	(.87)	.0864[1]	(.73)
p Value		<0.00		0.02		<0.00	
Hospital type							
1. General hospitals	520	−.2394[2345]	(.67)	.0627[3]	(.85)	.1492[35]	(.69)
2. Large teaching hospitals	777	−.0400[134]	(.73)	.0443[3]	(.88)	.0708[35]	(.71)
3. Academic hospitals	381	.3249[12]	(.78)	−.2488[125]	(.81)	−.2945[12]	(.73)
4. Specialist hospitals	45	.3948[12]	(.74)	.0592	(.90)	−.1568	(.70)
5. Specialty clinic	55	.2463[1]	(.86)	.4475[3]	(1.06)	−.2318[12]	(.77)
p Value		<0.00		<0.00		<0.00	

[12345]Differences with respect to reference group, significant at the 5% level as indicated by the Games-Howell post-hoc test.

Reviewing the results, a work orientation and setting are significantly more important to physicians working in support specialties than to physicians working in medical and surgical specialties. In addition, life-related interests are valued more by surgeons and physicians practicing supportive specialties than by physicians practicing medical specialties.

Physicians working in general hospitals score significantly lower on work-related interests compared to physicians working in other hospital types. Setting-related interests are valued least by physicians working in academic hospitals, and most by physicians working in specialty clinics. Finally, life-related interests are valued most by physicians working in general hospitals and least by physicians working in specialty clinics.

Standardized model

Additional evidence for differences in the value attached to different interests is provided by regressing the latent factors on both the type of hospital and type of specialty. The results are depicted in Table 6. A significant difference in work-related interests is found for type of hospital. Significant differences in life-related interests are found for type of hospital as well as type of specialty.

The fit indices for each background variable containing the three latent constructs are acceptable.

Specialty group: $N = 1780$, χ^2 (df) = 188.874 (30), $p = .0000$, RMSEA = .055, CFI = .918, TLI = .877.

Hospital type: $N = 1779$, χ^2 (df) = 186.162 (30), $p = .0000$, RMSEA = .054, CFI = .926, TLI = .889.

For the work orientation, the type of hospital has a stronger effect than the specialty group. For the setting orientation, the relationship with both specialty group and hospital type is non-significant, while for the life orientation, the hospital type has a bigger effect than the specialty group. Overall, the influence of hospital type is stronger than specialty group.

Discussion

The results of our study provide a better understanding of both the content and the structure of interests held by physicians. More specifically, the value attached to these interests is not uniform across physicians in different specialties and hospitals.

Our empirical results support the distinction hypothesized by Thompson (1993) between primary and secondary interests. Physicians perceive helping patients as their primary interest. By applying factor analysis we managed to identify three clusters, or dimensions, of secondary interests: work, setting and life. The factor loadings and correlations between latent factors of secondary interests are depicted in Fig. 1.

Our results indicate that it is possible to reliably measure interests by using a 10-item self-explicated method, providing new opportunities for both research and practice. When applied carefully, it could advance research by enabling tests of hypothesized relationships between interests, interest dissatisfaction, power dependence as part of intra-organizational dynamics, and different forms of organizational change.

Table 6
Standardized results for secondary interests.

	Estimate	SE	Est./SE	Two-tailed *P*-value
Work				
Specialty group	0.098	0.031	3.172	0.002
Hospital type	0.435	0.033	13.021	0.000
Setting				
Specialty group	0.051	0.027	1.883	0.060
Hospital type	-0.048	0.030	-1.573	0.116
Life				
Specialty group	0.130	0.036	3.626	0.000
Hospital type	-0.269	0.042	-6.353	0.000

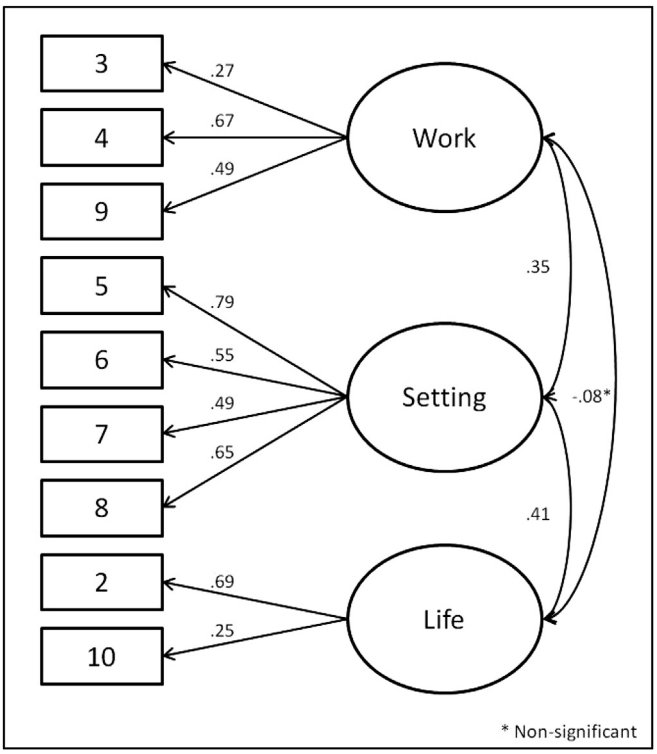

Fig. 1. General model of secondary interests.

Our research shows resemblance with earlier work with respect to physicians' values (Dawis, 1991; Hartung, Taber, & Richard, 2005). However, by defining and measuring interests in the context of dependencies experienced in the hospital or clinic rather than values, we were able to develop a framework from an intra-organizational perspective rather than from a more isolated viewpoint of the individual physician.

Managers in hospitals may use the instrument to assess areas of importance for physicians, allowing the managers to identify areas of organizational decision-making in which close cooperation with physicians may or may not be necessary. In addition, they may take advantage of differences in the value attached to interests between different specialty groups or types of hospital.

Our development of an instrument measuring physicians' interests has some limitations. First, the finding of an overriding primary interest in all groups raises the question whether the responses are socially correct and inevitably a basic characteristic of physicians' value sets.

The use of personalized invitations by e-mail increased the response rate, but it simultaneously may have led to some bias when dealing with sensitive issues like the relative importance of 'a good income' versus 'helping patients as well as possible' (Heerwegh et al., 2005). The different findings of rankings scores on this particular interests however indicate that this has to be maintained in our model.

Second, personality traits may be an implicit selection criterion for students leaving medical school and applying for a specialty (Vaidya et al., 2004). As personality type may influence interests, this may introduce a bias when researching interests among specialties.

Although the Dutch health-care system is comparable to many Western systems, it has a social insurance based payment structure in which elements of managed competition were introduced only recently. This may have had an impact on the interest scores in areas that are strongly influenced by the introduction of managed competition such as salaries and autonomy. So a second caveat is the generalizability of findings among different health-care systems.

Further research could focus on the influence of interests held by physicians on the performance of both specialty groups and hospitals. Although we expect a positive relationship between patient satisfaction and the value attached to the primary interest of helping patients, this has to our knowledge not been operationalized or tested. Finally, the relationship could be investigated between the interest in working autonomously and the rise of specialty clinics started by individual physicians.

Finally, as interests held by individuals are influenced by local cultures (Hofstede, 2001) our research could be replicated in other countries to assess its value across cultures.

Conclusion

Our study contributes to current understanding of the nature and structure of physicians' interests. In this study, we identified, measured, and modeled the interests of physicians in the Netherlands. We found evidence for the existence of both a single primary interest ('helping patients as well as possible') and nine secondary interests. These secondary interests are grouped in work-related, setting-related and life-related interests. Although we found no significant relationship between specialty group or hospital type and setting-related interests, we did find significant relationships with specialty and hospital type for work-related and life-related interests. Here, the influence of hospital type outweighs the influence of specialty group.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at http://dx.doi.org/10.1016/j.socscimed.2013.10.038.

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