

Postprint Version	1.0
Journal website	http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=16341619&query_hl=5&itool=pubmed_docsum
Pubmed link	http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=pubmed&cmd=Retrieve&dopt=AbstractPlus&list_uids=16530902&query_hl=13&itool=pubmed_docsum
DOI	10.1016/j.socscimed.2006.01.025

Funding for this research was supported by a grant from the Netherlands Organisation for Health Research and Development (ZonMw).

Corresponding author. Tel.: +3130 2729 697; fax: +3130 2729 729. E-mail addresses:
m.cardol@nivel.nl (M. Cardol), p.groenewegen@nivel.nl (P.P. Groenewegen),
p.spreeuwenberg@nivel.nl (P. Spreeuwenberg), l.vandijk@nivel.nl (L. Van Dijk),
w.vandenbosch@hag.umcn.nl (W.J.H.M. Van Den Bosch), d.debakker@nivel.nl (D.H. De Bakker).

Why does it run in families? Explaining family similarity in help-seeking behaviour by shared circumstances, socialisation and selection ☆

Mieke Cardol^{a,*}, Peter P. Groenewegen^{a,b}, Peter Spreeuwenberg^a, Liset Van Dijk^a,
Wil J.H.M. Van Den Bosch^c, Dinny H. De Bakker^a

^aNIVEL, P.O. Box 1568, 3500 BN Utrecht, Netherlands

^bUtrecht University, Department of Sociology and Department of Human Geography, 3500 BN Utrecht, Netherlands

^cNijmegen University, Department of General Practice, Netherlands

ABSTRACT

Why do contact frequencies with general practice of family members resemble each other? Many aspects related to the clustering of health-care utilisation within families have been studied, but the underlying mechanisms have not been addressed. This article considers whether family similarity in contact frequency with general practice can be explained as (a) a result of shared circumstances, (b) through socialisation, and (c) through homogeneity of background characteristics.

Data from the second Dutch national survey of general practice were used to test these mechanisms empirically. This survey recorded all consultations in 2001 for 104 general practices in the Netherlands, serving 385 461 patients. Information about socio-demographic characteristics was collected by means of a patient survey. In a random sample, an extended health interview took place (n ¼ 12 699).

Overall, we were able to show that having determinants in common through socialisation and shared circumstances can explain similarity in contact frequencies within families, but not all hypotheses could be confirmed. In specific terms, this study shows that resemblances in contact frequencies within families can be best explained by spending more time together (socialisation) and parents and children consulting a general practitioner simultaneously (circumstances of the moment).

For general practitioners, the mechanisms identified can serve as a framework for a family case history. The importance of the mechanism of socialisation in explaining similarities in help-seeking behaviour between family members points to the significance of knowledge and health beliefs underlying consultation behaviour. An integrated framework including these aspects can help to better explain health behaviour.

INTRODUCTION

Illness is socially constructed. Most people experience health symptoms all the time, but interpretations and actions vary. Past experiences and family backgrounds affect beliefs about the seriousness of health complaints and the value of medical care (Kirscht, 1974). Numerous studies have

shown that families can be considered as entities in which children are educated and patterns of behaviour are reproduced (Amato, 1996; Carlson & Corcoran, 2001; Chen & Kaplan, 2001; Cunningham, 2001; Glass, Bengtson, & Chorn Dunham, 1986; Parcel & Dufur, 2001; Sabatelli & Bartle-Haring, 2003; Uunk, 1996; Vollebergh, Iedema, & Raaijmakers, 2001). The bulk of attention has been focused on children's educational attainment, which is an important indicator of children's life chances. But families can also be considered as entities in relation to the utilisation of health care. Children learn to identify and define bodily feelings and how to respond to symptoms. Utilisation patterns are even transferred to succeeding generations (Aromaa, Sillanpää, Rautava, & Helenius, 2000; Bruijnzeels, 1997; Cornford & Cornford, 1999; Dowrick, 1992; Huijgen, 1978; Litman, 1974; Little et al., 2001; Mechanic, 1964; Schor, Starfield, Stidley, & Hankin, 1987; Starfield, Berg, Steinwachs, Katz, & Horn, 1979; Starfield et al., 1984). A recent study showed that despite family fluidity in recent times, 22% of the variance of contact frequencies with general practice refers to some kind of family similarity (Cardol et al., 2005). It might be assumed that differences in health status would explain differences in contact frequencies but health status alone cannot sufficiently explain why in some families all members consult their general practitioner more frequently than others (Dowrick, 1992).

It has been found that the influence of mothers is dominant as far as consultation patterns are concerned (Campion & Gabriel, 1985; Cardol et al., 2005; Mechanic, 1964; Schor et al., 1987; Tessler & Mechanic, 1978; van den Bosch, 1992), which is not surprising since traditionally women have specialised in family health and child rearing (Sindelar, 1982). But also the influence of fathers cannot be overlooked (Cardol et al., 2005). Furthermore, children play their own role in shaping parental behaviour and parents adjust child-rearing practices to former experiences (Whiteman, McHale, & Crouter, 2003). This is demonstrated by the fact that mothers are more inclined to consult a general practitioner with their first child than with following children (Campion & Gabriel, 1985; Huijgen, 1978; van den Bosch, 1992).

Family composition (smaller family size, two parent-families, family cohesion) has also been found to be an influence (Smits, 1978), although this could not be confirmed in other studies (Starfield et al., 1984). Life events can disturb the family balance and subsequently generate more contacts with general practice, and also a poor living environment can partly explain why some families present more illnesses than others (Dowrick, 1992; Litman, 1974).

In sum, many aspects have been studied in relation to the clustering of utilisation of care within families, but the underlying mechanism has not been addressed before. For general practitioners, family similarity in consultation behaviour is important in understanding (striking) help-seeking behaviour, health complaints and patient needs, because it may point to a different treatment approach. The research question of this article relates to why consultation frequencies of members of the same family resemble each other. Derived from the literature, it is hypothesised that family similarity is caused by having determinants of contact frequency in common (a) as a result of shared circumstances, (b) through mutual influence (socialisation), and (c) through partner selection and genetic inheritance (homogeneity of background characteristics). We develop a number of hypotheses and test them by using an existing, large dataset on general practice care in the Netherlands.

THEORETICAL BACKGROUND

Determinants of contact frequencies: the household production of health

A number of conceptual frameworks have been proposed to explain individual utilisation patterns of health care (Ajzen & Fishbein, 1980; Andersen, 1995; Janz & Becker, 1984; Rosenstock, 1966). The household production of health (HHPH) is the only one that views households instead of individuals as the locus of the production of health (Berman, Kendall, & Bhattacharyya, 1994; Schumann & Mosley, 1994). In the HHPH-framework, individuals are regarded part of a household in which division of labour and mutual influence occur between family members. The HHPH-framework seems to be the best suitable to explain health behaviour of families with young children, because young children do not decide themselves when to consult a general practitioner.

The HHPH discerns three levels through which a household can maintain the health of its members. First, households exist within a social and economic environment, which includes characteristics

specific to each household as well as community characteristics. Within these shared circumstances influencing opportunities and choices, households engage in health-maintaining or producing behaviours, the second level of health maintenance. Underlying these behaviours are patterns of knowledge, beliefs, cultural norms and expectations of efficacy. It is stressed that health-producing behaviours are not necessarily performed with explicit links to health in mind. Health effects or efficacy in health production make up the third level of the HHPH-framework. The HHPH-framework helps to identify relevant determinants of help-seeking behaviour in families and makes clear that various non-medical factors may determine what problems are brought to the attention of general practitioners. It is not explicitly directed at possible mechanisms that can explain family similarity in help-seeking behaviour. In this study a framework for explaining similarities within families is inserted in the HHPH-framework. It will be tested empirically whether family members have determinants of frequency in common through the mechanisms of shared circumstances, socialisation and selection. If so, this should result in some degree of within-family similarity in consultation patterns.

Shared circumstances

In the first level of the HHPH-framework members of one family share a collective context with accompanying 'health threats' or opportunities for health: families live together in the same house, the same community, and children visit the same school in a certain time period. Family income will affect the neighbourhood in which families can afford to live, housing, eating habits, the type of self-care strategies and health-care service utilisation. More restrictive circumstances are, e.g. financially, the less freedom of choice there will be in purchasing medicines and other health-related goods or visiting alternative health practitioners.

Therefore, it is hypothesised that:

1. In families with low income more within-family similarity in frequency of contact will exist than in families with higher income.

On the other hand, since families spend less time together than was usual some decades ago, the context may not be as shared as it used to be (Nam, 2004). For example, parents and older children have more individual activities outside the home and less often spend meals or leisure time together. Probably, siblings of the same age are more likely to share contextual circumstances, such as toddlers who mostly live with their mother in the home environment, and schoolchildren who share games, risks, playing-environment, day-care centre and school where common infections can easily be transferred from one child to another. It is hypothesised that:

2. In families with children similar in age, more within-family in frequency of contact will exist than in families with children at different phases of life.

Furthermore, life events such as parents' unemployment or the decease of a grandparent or a close friend of the family can affect the whole family. Stress theory holds that changes in family dynamics or circumstances cause stress (Carlson & Corcoran, 2001) and stress is known to increase vulnerability to illness (Dowrick, 1992; Mechanic, 1964). Also, young children may experience stress due to life events because of observed tension, grief or family 'atmosphere', although this may be more indirect than parental stress. It is hypothesised that:

3. In families that experience life events, more within-family in frequency of contact will exist than in families that did not experience life events.

Finally, we draw attention to another kind of shared circumstances, not as stable as for instance living environment, but rather related to sharing circumstances of the moment. Until the age of about twelve, most children will not visit a general practitioner by themselves; their parents accompany them. When conjoint contacts with general practice occur, family members that escort other family members can discuss their own minor health problems with the general practitioner. This will result in more in contact frequency within the family. Therefore, we hypothesise that,

4. In families with conjoint contacts with general practice, more within-family in frequency of contact will exist than in families without conjoint contacts.

Socialisation

According to the HHPH-framework, within these shared circumstances at the second level of the health maintenance process, household members display health-producing behaviours. Socialisation processes influence patterns of behaviour. Socialisation refers to a more gradual process of similarity: the learning of attitudes, beliefs and values of a social group to enable functioning in that group. Families are seen as the ideal context for primary socialisation since family life contains many different situations, habits and views, relationships are life-long and family members live together for years in an informal, safe setting (Denuwelaere, 2003). Coleman argued that family social capital, i.e. the time and attention parents spend in interaction with their children, is essential in child socialisation (Coleman, 1988, 1990). Nowadays, concern is expressed that parents are under organisational pressure and consequently have less time and energy left for their children (Therborn, 2004; Watkins, Menken, & Bongaarts, 1987). Following Coleman's argument, working parents can spend less time with their children than non-working parents and this may interfere with the socialisation of children. Furthermore, according to the hypothesis of resource dilution, that refers to the distribution of available resources over all family members (Wilcox-Gok, 1983), more siblings in one family also mean less time and attention for every member of the family. Time and attention also seem to depend on the educational level of the parents and the children's age. Compared with 1975, educated Dutch parents spend more time with their children. (van den Broek, Knulst, & Breedveld, 1999) Furthermore, time spent together decreases with children's age and parental influence decreases with age (Glass et al., 1986). Thus, we hypothesise that:

1. In families in which family members spend more time together, more within-family similarity in frequency of contact will exist than in families that spend less time together. In particular:
 - a. in families in which one of the parents has no paid employment,
 - b. in families in which both parents have a high educational level,
 - c. in families in which all siblings are younger than 13 years, and
 - d. in families with a maximum of two siblings more resemblance will exist than in families without these characteristics.

Selection

In the final step of the HHPH-model susceptibility and resistance to illness are included as biomedical intermediates between behaviour and health outcome (Berman et al., 1994). For our study, we broadened this towards a mechanism of selection that refers to homogeneity of background characteristics, such as vulnerability to illness or cultural background. Homogeneity of characteristics between family members can lead to homogeneity of health behaviour. Selection is not explicitly mentioned in the HHPH-framework, but for our research question it is an important mechanism since it describes similarity from the outset. As far as children are concerned selection would refer to, for example, children's inheritance of (vulnerability to) illness and responses to stress. Selection mechanisms are also known between marital partners. The choice of a partner depends on preferences for and similarity of characteristics or resources (Kalmijn, 1998; Uunk, 1996). 'Like will to like' also seems to involve health status; there is a tendency for the healthy to live with the healthy and for the less healthy to live with the less healthy (Monden, 2003). Not many studies explicitly address the mechanism of selection, because effects of selection are difficult to separate from other effects (van den Oord & Rowe, 1999). Good health for example, will often go hand in hand with a higher educational level, whatever the cause or consequence. In this study we hypothesise that homogeneity in background characteristics involves similarity in vulnerability to illness and similarity in health behaviour:

In families in which the parents have homogeneous cultural backgrounds, more within-family similarity in frequency of contact will exist than in families in which the parents are of different cultural backgrounds.

Furthermore, women more often contact general practitioners than men because of issues such as birth control and because traditionally they are engaged in child care and health matters of the family (Sindelar, 1982). Homogeneity in gender within the family involves increased chances of dealing with the same health problems. As a consequence, we also expect more similarity in families with solely males or females:

In families in which all members are female or male, more within-family similarity in frequency of contact will exist than in families of different sexes.

METHODS

Data from the second Dutch national survey of general practice was used (Westert, Jabaaij, & Schellevis, 2006). During one calendar year all contacts with patients (daytime and out-of-hours) were recorded in 104 practices in the Netherlands, comprising 195 general practitioners, who served 385.461 persons in total. Background information about the socio-demographic characteristics of all family members was collected by means of a short questionnaire. In the Netherlands, almost all inhabitants are listed in a general practice. In this paper, we made use of data concerning families with children up to the age of 18. The minimum age of the children was set at two because children below this age also attend baby or child health clinics. Families with children below the age of two were not excluded; only the children in that specific age category were excluded. Families were defined as one or two parents living together with at least one child and being listed in the same practice. Families with three or more adults, such as three-generation families or communes with several families living together, were excluded from the analysis. We also excluded eight practices, mainly because of technical problems with registration. The practices included are representative of the Netherlands with respect to level of urbanisation and composition of the patient population. The internal validity of the information from the medical records was good (van der Linden, Westert, Bakker, & Schellevis, 2004). For example, a vignette study showed 81% agreement in diagnoses between general practitioners.

A random sample of the Dutch speaking population of the participating practices also took part in an extended health interview ($n = 12.699$; response 64.5%). Respondents of the interviews were more often female as compared to the Dutch population (54% versus 51%) and more often had a western cultural background (96% versus 91%). Educational level, socio-economic status and self-reported health were comparable to the Dutch population. The interview contained questions about issues such as health complaints, life events and habits. It must be noted that our data set was not originally intended for the subject under study, thus the health interview was not developed as a family survey. Only one member of a family was interviewed, and consequently information was available for one family member at the most. Further, the questioning was not directed at family functioning such as cohesion between family members, joint activities, etc.

The internal validity of the short questionnaire and the health interview were good (van Lindert, Droomers, & Westert, 2004). As much as possible, questioning was based on validated instruments.

Operationalisation

Since we made use of the information from the medical record of the practices as well as information from the short questionnaire and the extended health interview, the number of cases included in the analysis is different for each separate analysis. For clarity data sources, numbers of cases, variables and samples are shown in Table 1.

Cultural background is based on the information of the short questionnaire and was defined in accordance with the definition of cultural origin by Statistics Netherlands (www.cbs.nl/en) and dichotomised into 'western' (natives and nonnatives from industrialised countries) and 'nonwestern' (non-natives from non-industrialised countries).

Educational level of the parents is also based on the short questionnaire and was categorised as shown in Table 1. Conjoint contacts were defined as those contacts in which two members of the same family, mostly a parent and a young child, present a health problem to the GP on the same day, calculated on the basis of the date of contact in the medical record. When parents accompany their child to the GP without presenting a health complaint to the GP themselves, these contacts are not considered conjoint contacts.

The family income is based on the health interviews and was corrected for family size and categorised into three groups, as shown in Table 1. Information about life events is also based on the health interviews, for this purpose the list of threatening experiences (LTE-Q) was used (Brugha & Cragg, 1990). It must be noted that only a small proportion of the respondents were interviewed about their life events. To enable the use of data from the patients' health interviews in a multilevel model, the

information provided by the respondent was assigned as a family characteristic to all family members. This was done only in cases where the information could safely be assumed that the included variables would act upon all family members (family life events, family income).

[TABLE 1]

Data analysis

Following the HHPH-framework, family similarity will be evaluated by regarding the family as a social system, including parents and children. In our cross-sectional data set it is not possible to distinguish between influences of parents to children or vice versa, and socialisation therefore must be interpreted as a family process in which all members of the family are considered agents of socialisation. Multilevel analysis (Leyland & Groenewegen, 2003) was used to analyse the data. In our study, individual similarity in frequency of contact between family members is analysed while taking into consideration the clustering of families in general practices.

Since we are interested in similarity within families, mean frequencies of contact were calculated for every family and the absolute deviation from the family mean was calculated for every family member (Bland & Altman, 1995). Individual deviation from the family mean shows how much similarity exists within families and was therefore set as the dependent variable in the regression analysis. A linear model was used to estimate the fixed effects. The fixed effects can be interpreted as in a regression model, showing the quantity of the similarity *within* families: a lower value representing less deviation from the family mean and consequently more similarity within families. Differences in fixed effects between the groups were tested with χ^2 tests (one-sided) only if the direction of the effect was in accordance with the hypothesis; the tolerance coefficient was set at 0.05.

All hypotheses were tested separately. Mean contact frequencies of families were used as control variables because they determine the possible rate of deviance from the family mean; in families with a small mean the range of deviation will also be small. We also corrected for variables known to influence individual frequency of contact: age, gender and family size. Age was calculated for parents and children separately, because in children the effect of age on contact frequency differs from that of adults (Cardol et al., 2005). The control variables age, gender, family size and mean contact frequency of family were centred around their means.

The analysis consists of two parts. First, we estimated a series of models (all hypotheses separately) corrected for the control variables as mentioned above. Secondly, we evaluated the impact of adding the most significant indicator of shared circumstances in the model, namely conjoint contacts, and the first step of the analysis was repeated to see whether the effects found in step related to socialisation and selection would change or disappear. If so, this would mean that shared circumstances of the moment are a more powerful indicator for similarity in contact frequencies between family members than the mechanisms of socialisation or selection.

RESULTS

Table 2 shows the relevant characteristics of the study population. More than 40 000 families were included in the study. The mean age of the parents was 41, whereas the mean age of the children was nearly 10. In general, children had lower frequencies of contact with general practice and a lower deviation from the family mean than the parents. In families in which both parents had a high educational level usually both parents also had paid employment and a western cultural background. In almost 40% of the families conjoint contacts occur.

[TABLE 2]

[TABLE 3]

Shared circumstances

In Table 3, within-family resemblance is expressed by the individual deviation from the family mean (fixed effect). A smaller fixed effect is related to more similarity in frequency of contact within families. Table 3 shows that a restricted financial context does not lead to more similarity within families. Contrary to our expectations, families in the highest income group show more similarity than families in the lowest income group, and families in the middle show most similarity. A smaller dispersion in siblings' age seems to correlate with more similarity between family members as hypothesised, but the effect is not significant. Also, we did not find any evidence for the association between life events in the family on the one hand, and vulnerability of illness and consequently more similarity in contact frequencies with general practice for all family members on the other. However, within-family similarity is much greater in families with conjoint contacts.

Socialisation

With the exception of the hypothesis about paid employment, we could support the hypotheses related to more time spent together and more resemblance within families. As expected, in families in which both parents have a high educational level family members resemble each other more than members of families with lower-educated parents. Family size and children's age matter: as hypothesised, more similarity exists in smaller families and in families with siblings younger than 13 years of age.

Selection

As far as the mechanism of selection is concerned, we hypothesised that homogeneous cultural backgrounds of parents and 'same-sex families' would lead to more within-family similarity in contact frequency. Contrary to our expectations, there is no difference in family similarity between families with parents with homogeneous and heterogeneous cultural backgrounds. In accordance with our hypothesis, in families with solely females, members do resemble each other more as far as frequency of contact with general practice is concerned. However, in families with solely male members the effect seems reversed. Within-family similarity seems to be greater with a female in the house, and therefore the effect probably fits into the mechanism of socialisation rather than that of selection.

[TABLE 4]

In a second step, we tested whether the shared circumstances expressed by conjoint contacts changes effect sizes as presented in the first step. The right-hand column in Table 3 shows that patterns of effects remain largely the same when the conjoint contacts are included in the model; we found no changes or new effects. This second step thus shows that the effect of shared circumstances, more specifically conjoint contacts, does not take away the effects related to the mechanism of socialisation already found. For purposes of clarity an overview of the above-described hypotheses and results is given in Table 4.

DISCUSSION

The family context of patients, does matter as far as consultation patterns with general practice are concerned. Derived from the literature, we hypothesised that similarity in contact frequencies within families can be explained by having determinants of contact frequencies in common through the mechanisms of shared circumstances, socialisation and selection (homogeneity of backgrounds). In specific terms, this study shows that family influence leading to similarity in help-seeking behaviour between family members can be best explained by the mechanism of socialisation and shared circumstances of the moment, but not all hypotheses could be confirmed.

Strengths and weaknesses of the study

A strong point of this research is that we could make use of a very large, nationally representative database and that the multilevel analysis accounts for hierarchy in the data. Most of the earlier

research related to this topic is not based on multilevel analysis. The analysis presented here is a first quantitative exploration of the mechanisms underlying within family similarity in contact frequencies with general practice. Various variables included in our model have been studied before, but have not been presented within a framework that might explain similarities in help-seeking behaviour within families. On the other hand, as far as the data set is concerned, its nature is very rich but it inevitably restricted the hypotheses we could test. For example, a cross-sectional study design makes it difficult to rule out differences between selection and socialisation, and questioning of the health interview was not directed at family functioning.

Another drawback of the study might be that a household definition and being listed in the same practice control the definition of family. In our data, we could not account for family fluidity. For example, as a result of co-parenting, children might belong to two households, and persons that are part of the family but not listed in the same practice are not included in our family definition. However, this drawback may be minor since the percentage of one-parent families in our study is only slightly higher than the percentage of one-parent families in the Netherlands (17%).

There is also the issue of missing data. The analysis concerning 'household income' is based on the information from the health interviews and the analysis related to 'family life events' could only be performed on part of the interview data because only part of the study population had been interviewed about this subject. Furthermore, in 21% of the families information about paid jobs, educational level and cultural background was missing. This could have resulted in decreased power to find any effects or undesirable selections within our study population. Related to the dependent variable, individual deviation from the mean family contact frequency, the missing families differed significantly from the other groups: their mean deviation from the family mean was significantly lower than in the other families. Also, categorising variables may have introduced bias. To limit this risk, we performed a sensitivity analyses to evaluate to what extent different cut-offs would present different results. Related to the variables family income, dispersion of children's age and educational level of the parents, different cut-off values did not produce different results. As far as educational levels of the parents are concerned, we also performed the analyses while including three educational levels of mothers only, since mothers are dominant as far as family influence on contact frequencies are concerned. These analyses showed the same pattern as presented in Table 3. A final drawback may be the framework we used. The HHPH-framework has been criticised; comments include paying too little attention to cultural differences and individual preferences that affect choice, and there is controversy that households make decisions (Berman et al., 1994). However, as explained in the theoretical background of this study, in answer to our research question we needed a framework that views individuals not in isolation but as part of a social system in which mutual influence between family members takes place.

Meaning of the study: shared circumstances

As far as shared circumstances are concerned we could confirm that part of the similarities in contact frequency within families can be explained by shared circumstances of the moment: family members accompanying each other to the general practitioner and presenting a health problem to the general practitioner. In future research it would be interesting to find out in which families more conjoint contacts occur and how this changes with the children's age or socio-economic status of the family. We did not find more similarity in contact frequency with general practice in families with siblings of similar age, which may indeed point towards individualisation processes and less shared context, as mentioned in the introduction. We also could not confirm the hypothesis that financial restraints in families result in more resemblances in contact frequency with general practice. This might support the suggestion that health-producing behaviour is not so much a question of money, but rather one of preferences. Schooling helps people to choose healthier life styles, but it is probably more important that schooling determines time preferences in which case health is important (Kenkel, 1991).

In general practice, the mechanisms identified can serve as a framework for a family case history. Family contextual factors often cannot be changed but may shed another light on strategies for prevention and treatment. Furthermore, general practitioners can effectively use the clustering in families that consult their general practitioner together, for example in providing information about (un)healthy family behaviour.

Meaning of the study: socialisation

As far as socialisation is concerned, we could confirm that more time spent together is associated with more within-family similarity in frequency of contact with general practice. In families with parents with a high level of education, in small families and in families with siblings not older than the age of 12, more within-family similarity exists. The results related to smaller families and families with young siblings are in accordance with the literature (Smits, 1978; Wilcox-Gok, 1983). As far as the similarity in families with educated parents is concerned, probably resources such as the possibility of employing a cleaner and the adequate time for household activities help them to spend more time together (van den Broek et al., 1999). Less available time can also be counterbalanced by 'quality time' spent together. This might explain why we could not find any differences in resemblances between families according to the employment status of the parents. As shown in Table 2, in almost three quarters of the families with higheducated parents both parents have paid employment. A second explanation is that it might not be the employment or resources per se that matter in the socialisation process: time budgets and resources counteract (Korupp, 2000). The number of hours worked will restrict parental presence at home but type of employment affects available resources. For example, employment in the health-care sector affects illness behaviour and help-seeking behaviour (Furer, 2001). Subsequent research must differentiate between number of working hours and type of employment, corrected for parents' educational level and resources. For general practitioners the relationship between family and disease serves as a basis for so-called 'contextual medicine'. Within families people learn what is considered illness and how to deal with it, and illness influences family functioning and thus consultation behaviour of other members. This study adds that a large part of within family similarity in consulting behaviour can be explained by socialisation, which in turn can be influenced by a family approach in the consultation room (Cardol et al., 2005; Launer & Lindsey, 1997).

Meaning of the study: selection

We did not find support for the hypotheses related to selection; neither related to the cultural background of parents nor to the sexes of the family members. Unfortunately, information on the duration of living together as a family was lacking. If families are together for a longer time, socialisation might cancel out differences in (cultural) background and consequently differences in help-seeking behaviour. Moreover, perhaps the mechanism of selection predominantly explains similarities in health status within families, as is known with regard to hereditary diseases, instead of similarity with regard to behaviour such as contact frequency with general practice. It may be that which mechanism is the most important in the explanation of similarity between family members differs with the type of health complaint. This can be the subject of further study. The importance of the mechanism of socialisation, in explaining similarities in helpseeking behaviour between family members, points to the significance of knowledge and health beliefs underlying behaviour in the HHPH-framework. An integration of the HHPH-framework and the Health Belief Model, in which health beliefs are central, can be fruitful in turning the HHPH into a more complete framework to help explain health behaviour.

In daily practice, for general practitioners of course individual patients are of primary concern. However, with it, interest in the personal contexts of patients helps GPs to add or delete probabilities that may point to right diagnoses and treatment.

ACKNOWLEDGEMENTS

The authors wish to thank Judith de Jong and Alistair Leyland for sharing their knowledge and insights related to the method of analyses in this study.

TABLES AND FIGURES

Table 1
 Study data: sources, variables, samples and missing data

Source	Total population	Sample	
Patient short questionnaire	385 461 individuals	Families with children 2–18 years (siblings of 0–2 years or > 18 years within families were excluded; $n = 150\,633$ individuals; $n = 41\,431$ families)	
One-year registration of all face-to-face contacts in electronic medical record	385 461 individuals	$n = 41\,431$ families	
Patient extended health interview	12 699 individuals	One member of families with children 2–18 years ($n = 5459$ individuals aggregated to families)	
Variable view	Source (n families)	Categorisation	Missing on family level
Children's age	Patient short questionnaire ($n = 41\,431$)	Differences in age between siblings in families: 0–2 years (low), 2.1–4 years (middle); >4 years (high). Excluded: $n = 11\,015$ families with one sibling (26%)	None
Sex	Patient short questionnaire ($n = 41\,431$)	Male Female	None
Family income	Patient extended health interview ($n = 5459$)	High income: >2500 Middle income: 1700–2500 Low income: < 1700	605 families (11%)
Life events	Part of patient extended health interview ($n = 1837$)	No life events in the family One or more life events	507 families (28%)
Conjoint contacts	Registration in medical record ($n = 41\,431$)	Families with children 2–18 years	None
Paid job parent	Patient short questionnaire ($n = 41\,431$)	Families with children 2–18 years	8837 families (21%)
Educational level parents	Patient short questionnaire ($n = 41\,431$)	Primary and secondary education Post secondary and tertiary education	8820 families (21%)
Family size	Patient short questionnaire ($n = 41\,431$)	Minimum : one parent and one sibling	None
Cultural background parents	Patient short questionnaire ($n = 41\,431$)	Both western Heterogeneous Both non-western	8641 families (21%)

Table 2
 Characteristics of the study population ($n = 150\,633$)

Characteristics	$N/\text{mean (range) }/\%$
<i>Individuals within families</i>	
Number of parents	74 703
Children	75 930
Mean age parents (range)	40.5 (19–75)
Children	9.8 (2–18)
Percentage individuals without contacts with general practice	31.4%
Mean frequencies of contact of parents in registration year (range)	3.1 (0–75)
Children	1.9 (0–43)
Mean deviation from family mean of parents (range)	1.8 (0–43.7)
Children	1.4 (0–29.8)
<i>Families within general practices</i>	
Number of families	41431
Percentage of one parent families	19.7%
Percentage families with both parents high educated	16.8%
Percentage families with both parents paid employment	53.4%
Of families with both parents high educated: percentage both western background	91.2%
percentage both paid employment	73.1%
Mean frequencies of contact of families in registration year (range)	2.6 (0–31)
Percentage families with one or more conjoint contact with general practice	38.5%
Average number (sd; range) of conjoint contacts in those families	1.8 (1.4; 1–17)

Table 3

Family similarity in frequencies of contact with general practice as expressed in the individual deviation from the mean family contact frequency; linear regression analyses, fixed effects^a and standard errors

Hypotheses	Number of families	Analysis corrected for family mean, family size, age and gender Mean deviation from family mean contact frequency (SE)	Analysis corrected for family mean, family size, age and gender <i>and conjoint contacts</i> Mean deviation from family mean contact frequency (SE)
Shared circumstances: constraints lead to more similarity			
Low family income	1173	1.660(0.033)	1.749(0.035)
Middle group	1317	1.534(0.024)	1.611(0.026)
High family income	2364	1.605(0.017)	1.682(0.019)
Shared circumstances: similarities in age means more context shared and leads to more similarity			
Dispersion siblings' age			
<2 years ^b	11403	1.623(0.012)	1.736(0.012)
2-4 years	14682	1.615(0.012)	1.724(0.013)
>4 years	4331	1.660(0.019)	1.772(0.021)
Shared circumstances : family life events increases vulnerability and lead to more similarity			
No life events	1070	1.572(0.031)	1.655(0.036)
Life events	260	1.598(0.081)	1.697(0.082)
Shared circumstances: simultaneous visits to the practice lead to more similarity			
Conjoint contacts	15960	1.454(0.012)***	-
No conjoint contacts	25471	1.717(0.011)	
Socialisation: More time spent together leads to more similarity			
No parent paid job ^c	3473	1.506(0.026)	1.745(0.031)
Both parents paid job	11709	1.473(0.011)	1.741(0.013)
One parent paid job	17412	1.505(0.013)	1.770(0.016)
Two parents tertiary educ.	5477	1.579(0.012)*	1.682(0.014)*
One parent tertiary educ.	5704	1.592(0.013)	1.691(0.015)
Two parents primary/secondary educ.	21430	1.616(0.011)	1.704(0.011)
All siblings < = 12 years ^b	22747	1.564(0.011)***	1.685(0.011)**
Not all siblings < = 12 years	18684	1.644(0.014)	1.737(0.014)
Up to 2 children in family ^d	30177	1.538(0.011)***	1.603(0.010)***
More than 2 children	11254	1.697 (0.015)	1.824(0.017)
Selection: homogeneous backgrounds lead to more similarity			
Parents both non-western	2198	1.604(0.026)	1.766(0.028)
Parents both western	29232	1.597(0.011)	1.696(0.011)
Parents different culture	1360	1.589(0.025)	1.704(0.025)
All female	2522	1.350(0.026)***	1.446(0.027)***
Not all female	38909	1.610(0.011)	1.717(0.011)
All male	533	1.721(0.046)	1.853(0.045)
Not all male	40898	1.600(0.011)	1.705(0.011)

*Differences between groups are significant and in accordance with hypotheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

^aSignificant fixed effects in accordance with expectations are printed in **bold**, hypotheses are tested separately.

^bTested without the control variable related to children's age.

^cTested in sample with families with children < = 12 years.

^dTested without the control variable related to family size.

Table 4
 Scheme of mechanisms, hypotheses and results of the study

Mechanism	Hypotheses	Determinants of similarity	Outcome
Shared circumstances	1. Restrictions in context \Rightarrow restrictions in behaviour \Rightarrow more within-family similarity in frequency of contact	Family income	Rejected
	2. Similarity in age \Rightarrow more context shared \Rightarrow more within-family similarity in frequency of contact	Age differences siblings	Rejected
	3. Live events in family \Rightarrow vulnerability to illness \Rightarrow more-within family similarity in frequency of contact	List of threatening experiences	Rejected
	4. Conjoint contacts with general practice \Rightarrow conditions permit \Rightarrow more within-family similarity in frequency of contact	Conjoint contacts	Confirmed
Socialisation	1. More time spend together \Rightarrow more socialisation \Rightarrow more within-family similarity in frequency of contact	Not both parents of children $< = 12$ years paid employment	Rejected
		Two parents high educational level	Confirmed
		All siblings $< = 12$ years	Confirmed
		Small family size	Confirmed
Selection	1. Homogeneous backgrounds \Rightarrow homogeneous behaviour \Rightarrow more within-family similarity in frequency of contact	Cultural background	Rejected
		Family members of same sex	Rejected (\Rightarrow socialisation)

REFERENCES

- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall Inc.
- Amato, P. R. (1996). Explaining the intergenerational transmission of divorce. *Journal of Marriage and the Family*, 58, 628–640.
- Andersen, R. M. (1995). Revisiting the behavioral model and access to medical care: Does it matter? *Journal of Social Health and Behavior*, 36(1), 1–10.
- Aromaa, M., Sillanpää, M., Rautava, P., & Helenius, H. (2000). Pain experience of children with headache and their families: A controlled study. *Pediatrics*, 106(2), 270–275.
- Berman, P., Kendall, C., & Bhattacharyya, K. (1994). The household production of health: Integrating social science perspectives on micro-level health determinants. *Social Science & Medicine*, 38(2), 205–215.
- Bland, J. M., & Altman, D. G. (1995). Comparing methods of measurement: Why plotting difference against standard method is misleading. *The Lancet*, 346, 1085–1087.
- van den Bosch, W. J. H. M. (1992). *Epidemiologische aspecten van morbiditeit bij kinderen [Epidemiological aspects of morbidity in children]*. Dissertation, University Nijmegen.
- van den Broek, A., Knulst, W., & Breedveld, K. (1999). *Naar andere tijden? [Towards other times?]* Den Haag, Sociaal en Cultureel Planbureau.
- Brugha, T. S., & Cragg, D. (1990). The list of life threatening experiences: The reliability and validity of a brief life events questionnaire. *Acta Psychiatrica Scandinavica*, 82, 77–81.
- Bruijnzeels, M. A. (1997). *Illness in children and parental response*. Dissertation, Erasmus University Rotterdam.
- Campion, P., & Gabriel, J. (1985). Illness behaviour in mothers with young children. *Social Science & Medicine*, 20(4), 325–330.
- Cardol, M., Groenewegen, P. P., De Bakker, D. H., Spreeuwenberg, P., Van Dijk, L., & Van den Bosch, W. J. H. M. (2005). Shared help-seeking behaviour within families: A retrospective cohort-study. *British Medical Journal*, 330(7496), 882–884.
- Carlson, M. J., & Corcoran, M. E. (2001). Family structure and children's behavioral and cognitive outcomes. *Journal of Marriage and the Family*, 63, 779–792.
- Chen, Z., & Kaplan, H. B. (2001). Intergenerational transmission of constructive parenting. *Journal of Marriage and the Family*, 63, 17–31.
- Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, 94(Suppl.), S95–S120.
- Coleman, J. S. (1990). *Foundations of social theory*. Cambridge, MA: The Belknap Press of Harvard University Press.

- Cornford, C. S., & Cornford, H. M. (1999). I'm only here because of my family. A study of lay referral networks. *British Journal of General Practice*, 49, 617–620.
- Cunningham, M. (2001). The influence of parental attitudes and behaviors on children's attitudes toward gender and household labor in early adulthood. *Journal of Marriage and the Family* 63, 111– 122.
- Denuwelaere, M. (2003). Een ongelijke taakverdeling tussen man en vrouw: Van ouders naar kinderen [Gender inequity in the division of labor: From parents to children]. *Mens en Maatschappij*, 78(4), 355–399.
- Dowrick, C. (1992). Why do the O'Sheas consult so often? An exploration of complex family illness behaviour. *Social Science & Medicine*, 34(5), 491–497.
- Furer, J. W. (2001). *Protoprofessionalisering; een empirisch onderzoek naar de validiteit van protoprofessionalisering en naar haar verbanden met gezond(heids)gedrag, ziektegedrag en gezondheidstoestand* [Protoprofessionalization; empirical research into the validity of protoprofessionalization and its relationships with health behaviour, sickness behaviour and health status]. Dissertation, University Nijmegen.
- Glass, J., Bengtson, V., & Chorn Dunham, C. (1986). Attitude similarity in three-generation families: Socialization, status inheritance or reciprocal influence? *American Sociological Review*, 51, 685–698.
- Huijgen, F. J. A. (1978). *Family medicine: The medical life history of families*. Nijmegen: Dekker & Van de Vegt.
- Janz, N. K., & Becker, M. H. (1984). The health belief model: A decade later. *Health Education Quarterly*, 11(1), 1–47.
- Kalmijn, M. (1998). Intermarriage and homogamy: Causes, patterns, trends. *Annual Review of Sociology*, 24, 395–421.
- Kenkel, D. S. (1991). Health behavior, health knowledge, and schooling. *Journal of Political Economy*, 99(21), 287–305.
- Kirscht, J. P. (1974). The health belief model and illness behavior. *Health Education Monographs*, 2(4), 387–408.
- Korupp, S. E. (2000). *Mothers and the process of social stratification*. Dissertation, University Utrecht.
- Launer, J., & Lindsey, C. (1997). Training for systematic general practice: A new approach from the Tavistock clinic. *British Journal of General Practice*, 47, 453–456.
- Leyland, A. H., & Groenewegen, P. P. (2003). Multilevel modeling and public health policy. *Scandinavian Journal of Public Health*, 31, 267–274.
- van der Linden, M. W., Westert, G. P., Bakker, D. H., & de Schellevis, F. G. (2004) Klachten en aandoeningen in de bevolking en in de huisartspraktijk. [Complaints and diseases in the population and in general practice] *Second Dutch National Survey of General Practice*, NIVEL/RIVM, Utrecht/ Bilthoven.
- van Lindert, H., Droomers, M., & Westert, G. P. (2004). Een kwestie van verschil: Verschillen in zelfgerapporteerde leefstijl, gezondheid en zorggebruik. [Differences in selfreported lifestyle, health and use of care]. *Second Dutch National Survey of General Practice*, NIVEL/RIVM, Utrecht/Bilthoven.
- Litman, T. L. (1974). The family as a basic unit in health and medical care: A social-behavioral overview. *Social Science & Medicine*, 8, 495–519.
- Little, P., Somerville, J., Williamson, I., Warner, G., Moore, M., Wiles, R., et al. (2001). Family influences in a cross-sectional survey of higher child attendance. *British Journal of General Practice*, 51, 977–982.
- Mechanic, D. (1964). The influence of mothers on their children's health attitudes and behavior. *Pediatrics*, 33, 444–453.
- Monden, C. (2003). *Education, inequality and health*. Dissertation, University Nijmegen.
- Nam, C. B. (2004). The concept of the family: Demographic and genealogical perspectives. *Sociation Today* 2 (2), www.ncsociology.org/sociationtoday/v22/family.htm
- van den Oord, E. J. C. G., & Rowe, D. C. (1999). A cousin study of associations between family demographic characteristics and children's intellectual ability. *Intelligence*, 27 (3), 251–266.
- Parcel, T. L., & Dufur, M. J. (2001). Capital at home and at school: Effects on child social adjustment. *Journal of Marriage and the Family*, 63, 32–47.
- Rosenstock, I. (1966). Why people use health services. *The Milbank Memorial Fund Quarterly*, 44, 94–127.
- Sabatelli, R. M., & Bartle-Haring, S. (2003). Family of-origin experiences and adjustment in married couples. *Journal of Marriage and the Family*, 65, 159–169.
- Schor, E., Starfield, B., Stidley, C., & Hankin, J. (1987). Family health. *Medical Care*, 25(7), 616–626.

- Schumann, D. A., & Mosley, W. H. (1994). The household production of health: Introduction. *Social Science & Medicine*, 38(2), 201–204.
- Sindelar, J. L. (1982). Differential use of medical care by sex. *Journal of Political Economy*, 90(5), 1003–1019.
- Smits, A. J. A. (1978). Kind, huisarts en gezin [Child, general practitioner and family], University Nijmegen.
- Starfield, B., van den Berg, B., Steinwachs, D., Katz, H., & Horn, S. (1979). Variations in utilization of health services by children. *Pediatrics* 63 (4), 633–641. Starfield, B., Katz, H., Gabriel, A., Livingstone, G., Benson, P.,
- Hankin, J., et al. (1984). Morbidity in childhood: A longitudinal view. *The New England Journal of Medicine*, 310(13), 824–829.
- Tessler, R., & Mechanic, D. (1978). Factors affecting children's use of physician services in a prepaid group practice. *Medical Care*, 16(1), 33–46.
- Therborn, G. (2004). Marriage and mutations of the socio-sexual order. In *Between sex and power*. London/New York: Routledge; Taylor & Francis Group.
- Uunk, W. J. G. (1996). *Who marries whom? The role of social origin, education and high culture in mate selection of industrial societies during the twentieth century*. Dissertation, University Nijmegen.
- Vollebergh, W. A. M., Iedema, J., & Raaijmakers, Q. A. W. (2001). Intergenerational transmission and the formation of cultural orientations in adolescence and young adulthood. *Journal of Marriage and the Family*, 63, 1185–1198.
- Watkins, S., Menken, J. A., & Bongaarts, J. (1987). Demographic foundations of family change. *American Sociological Review*, 52, 346–358.
- Westert, G. P., Jabaaij, L., & Schellevis, F. G. (Eds.). (2006). *Morbidity, performance and quality in primary care*. Oxon, UK: Radcliff Publishing (Forthcoming March).
- Whiteman, S. D., McHale, S. M., & Crouter, A. C. (2003). What parents learn from experience: The first child as a first draft? *Journal of Marriage and the Family*, 65, 608–621.
- Wilcox-Gok, V. L. (1983). Sibling data and the family background influence on child health. *Medical Care*, 21(6), 630–638.