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Support for non-conventional medicine:

Cognitive and socio-cultural coherence

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Abstract

This study investigated patterns of beliefs concerning CAM (complementary/ alternative medicine) in 403 subjects in Israel. Multidimensional scaling and Generalised linear model analyses of their answer to a questionnaire evidenced two sources of organizing factors : (1) commitment to CAM approaches and techniques is dependent on the specific approach, and this differentiation may be related to corresponding explanatory principles such as Powerful Action, Healthy Living, and Fighting Stress and (2) broad support for CAM in general, correlated with New Age ideological cultural themes (ecology, the paranormal, Eastern wisdom) which share an underlying framework of demedicalization. It did not prove possible to cluster respondents into types, and factor analysis uncovered but a single factor. This suggests that subjects combine the organizing factors in a pragmatic blend, a finding congruent with a post-modern interpretation that emphasises the blending of high and low, ideological and practical.

Key words: complementary/alternative medicine; belief structure; Israel; paranormal

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About 30 years ago, when so-called "alternative" medicine made its debut in Israel, it was largely the preserve of the faddish or the rebellious. The name-changes it has undergone throughout the years—first to complementary medicine, and now to integrated or natural medicine—mark its changing status. Non-conventional medicine is now dispensed by MDs in university and general hospitals in North America, Europe and all over Israel. Israel's first Department of Integrated Medicine opened at Assaf Harofeh Hospital in 1991, and treats up to 14,000 patients a year (Elliman, 1996).

Complementary/alternative medicine (CAM) has to compete with a powerful medical establishment. Israel has one of the highest doctor-patient ratios in the world. Primary and hospital care are readily available. Studies show high levels of satisfaction from conventional medical care among Israelis (Biderman, Carmel & Yeheskel, 1994; Carmel, 1995; Pilpel-Ezran, 1984). Nevertheless, as in other western societies, Israel has recently experienced a rise in the activity of and demand for CAM (Bernstein & Shuval, 1997). Israelis spend about \$60 million annually on CAM, with some 155,000 families seeking such treatment, according to data published in The Jerusalem Post (April 13, 1994 p.3).

Departments of "integrated medicine" and other clinics that are sponsored by the health funds gather all the different non-conventional medicine methods under a single roof - such as acupuncture, reflexology, homeopathy and other therapies that did not emerge from western biomedical culture. These clinics are controlled by physicians, who assess biochemical test results and CT scans before deciding on non-conventional treatment. This reflects the legal situation in Israel, where practitioners of alternative medicine (other than chiropractic) are not licensed by the State and hence are legally prohibited from delivering medical treatment unless they are also MDs or work under the supervision of an MD.

CAM Theories and praxis: A Cognitive Perspective. Cognitively speaking, CAM represents a case of "naive theory", the attempt by individuals to understand a domain without the benefit of formal and organised teaching (Leiser, 2001). The process of cognitive development and knowledge acquisition is such that

uncoordinated knowledge results. As Profitt (1999) put it: "Adults' naive conceptions about how the world works appear to be simplistic, inconsistent, and situation-specific." One reason for this is simply that people acquire their knowledge about any one domain in a variety of contexts, and from a variety of sources, and there is no overall mechanism responsible for bringing coherence in the resulting confusion (Leiser, 2001).

Many cognitive psychologists, especially developmentalists, argue that human reasoning is guided by a collection of domain-specific systems of knowledge. According to this view, every system is characterised by a set of core principles that define the entities covered by the domain and support reasoning about those entities (Hirschfeld & Gelman 1994; Carey & Gelman 1991; Keil 1990 1994; Wellman & Gelman 1992; Wellman & Inagaki , 1997; Carey & Spelke. 1994; Rosser 1994; Markman & Gentner, 2001). Each such stance represents a particular appropriate way of looking at aspects of the world. However, when two of them apply to the same object, they can not readily be coordinated. Consider for example the psychological and the physical stance: when both are applied to the mind, they result in the perplexity concerning the relations of body and psyche or soul. Conversely, the same two stances, applied to illness, may explain the prevalent notion that for CAM to be effective, belief in the effectiveness of the treatment by the patient is important (Leiser and Noiman, forthcoming)

The terms "complementary and alternative medicine" cover a wide range of therapeutic approaches that present themselves as based on very different conceptions. Aromatherapy and acupuncture, yoga, Bach herbs, light therapy and healing involve dissimilar notions: spiritualistic, based on physical contact, on communion with nature, etc. This line of argument leads to expect that support for one technique will not carry over to others.

The situation is even more complex, in view of the dual nature of CAM, and of medicine in general: it involves both remedies and theoretical accounts of the reasons for their effectiveness. Leiser, Doitsch and Meyer (1996), who studied the sources of young mother's beliefs concerning everyday treatment for high fever, concluded that the rationale behind a remedy seems to be accessory, rather than the motive for relying on it. Folk remedies are hallowed by tradition, and belief in them is more strongly entrenched than their

theoretical reconstructions. In the course of medical history, physicians endeavoured to harmonise their theoretical models with commonly accepted practice, doing so in different guises at different times. The different theoretical constructions that purport to explain the effectiveness of the various techniques may therefore carry less weight than the general willingness to use these techniques, regardless of the theory that purports to account for them.

The Meaning and Use of CAM: A Sociological Perspective. Sociologically speaking, CAM can represent a paradigm of "demedicalization." It goes against the grain of western biomedical culture, which has dominated the western world for many decades without any alternative. The hegemony of biomedical culture has generated a process sociologists termed as "medicalization", which means that more and more of human behaviour is being defined as a medical problem, hence mandating or licensing the medical profession to provide some type of treatment for it (for classical exposition of this view, see Conrad, 1975, 1992; Illich, 1976; Zola, 1972). Medicalization has occurred in broad areas of human life such as deviance (alcoholism, mental disorders, eating disorders, learning disabilities etc.), as well as in common life processes including childbirth, aging, menstruation, menopause, infertility, anxiety, and death.

CAM is taken as a step toward demedicalization since it moves away from the traditional medical model and can potentially by-pass the medical profession (Paterson & Britten, 1999). Lowenberg and Davis (1994) found support for demedicalization in CAM's reduction of medical technology and reduction of status difference between providers and clients. The empirical literature has conflicting findings about the importance of this factor. Siahpush (1998) found some support for it, as did Furnham and his associates (Furnham & Bhagrath, 1993; Furnham & Kircaldy, 1996). Mitzdorf et al. (1999), for instance, report that 68% of the patients about to enter an alternative medicine hospital expressed negative opinions concerning conventional therapies and conventional doctors' treatment. On the other hand, Astin (1998) found that dissatisfaction with conventional medicine did not predict use of alternative medicine.

This dissatisfaction with conventional medicine has two distinct aspects, the one relating to the medical outcome and the other relating to the medical encounter (Siahpush, 1999), and investigators in the past have

not always separated the two dimensions. Even if the distinction is drawn, findings vary. Bernstein and Shuval (1997) did find that disappointment with the perceived lack of success of conventional medical treatment was a significant factor in Israeli patients turning to CAM, while Siahpush (1999) concluded that neither dimensions explain people's attitudes towards alternative medicine.

The meaning of CAM should evidently also be considered in the context of patients' attitudes. An overview of the literature on public attitudes towards CAM suggests two perspectives. The first perspective centers on CAM patients as characterised by an alternative meaning or ideology (Douglas, 1994). In other words, CAM allows people to express dissatisfaction with contemporary society and its values, and feel they are doing something personally to resist it. This perspective implies that there is a certain ideology or "mindset" that characterises those who turn to CAM. This "mindset" has never been explicitly pinpointed, but it can be connected to beliefs in post Judeo-Christian spirituality, mysticism, the supernatural, and "New Age" philosophies (see, for example, Schneirov and Gezik, 1998). This perspective is compatible with the view of CAM as supporting demedicalization. Astin's (1998; Astin, Shapiro, Lee & Shapiro, 1999) survey of nearly one thousand alternative medicine users in the US concluded that the majority of users do not appear to do so because they are dissatisfied with conventional medicine; they turn to CAM because they find these health care alternatives more congruent with their own values, beliefs, and philosophical orientations toward health and life. Siahpush (1999) too found that dissatisfaction with conventional medicine does not explain people's attitudes towards alternative medicine. In his study, a substantial proportion of variance was explained by a set of values that include faith in natural remedies, subscribing to a holistic view of health, and believing in individual responsibility.

In contrast to the above-mentioned perspective of demedicalization, a competing explanation regards the recourse to CAM as a "second resort" driven by some medical condition that could not be treated by conventional medicine. Recourse to CAM is viewed as a limited attempt to solve a specific medical problem rather than reflecting a comprehensive ideology, outlook or lifestyle. Several studies, conducted with patients suffering from a chronic disease such as rheumatoid arthritis or asthma, indicated that such patients first

sought help from an MD. Only when the problem was not solved did they turn to CAM.

It seems that we need to go beyond the dichotomy that the two above-mentioned perspectives represent. A careful consideration of the experience of CAM users may reveal that meaning and use, ideology and pragmatism, are for them intertwined in many complicated ways. We need to look for differentiation in the form of multi-faceted user profiles, in which specific beliefs may be connected to the use of particular forms CAM, and vice versa. This is the subject of the following analysis.

Correlates. There are therefore conflicting reasons to expect support for alternative medicine to be specific or general. Cognitive considerations suggest that each technique or family of techniques will have its own supporters, and there should be little reason to expect overall coherence. On the other hand, the sociological analyses outlined above are not differentially related to specific techniques or their underlying rationale. Training, marketing and practicing the CAM techniques appear to be predicated on a common ground. The same practitioner will often learn and apply several techniques, while the reasons for turning to CAM mentioned in the sociological literature are broader than particular techniques. The sociological perspectives (i.e., demedicalization, “glocalization”, and dissatisfaction) are too general to explain the “mindset” of CAM users. While keeping in mind the relevance of these perspectives for collective behaviour, we need to supplement the sociological level with the context of personal utilization, attitudes, and values, and with the cognitive coherence of the underlying beliefs.

The present research was designed to study both the structure of the belief system in the domain of CAM, and the effects of demographic determinants on the beliefs held. Support for CAM appears to be characteristic of patients with a self-aware lifestyle and a more active approach to managing their problems (Furnham & Kircaldy, 1996; Kersnik, 2000). However, the rise of CAM is not a phenomenon exclusively related to medicine. It partakes of a wider cultural trend related to environmentalism, feminism, holism and new age. The cluster of values associated with CAM is not easily characterised. Astin (1998) points to commitment to environmentalism, commitment to feminism, and interest in spirituality and personal growth psychology. Verheij, de Bakker and Groenewegen (1999) point to health locus of control and religion. de Blecourt and

Usborne (1999) maintain that health is both a physical and an emotional, an individual as well as a social phenomenon, so that a study of women's medicine cannot be dissociated from women's culture. In a somewhat different spirit, Gaylord (1999) emphasises the relationships between alternative medicine and feminism, and holds that "The rise in alternative therapies' use in the United States represents a shift in cultural concepts of health from an outmoded patriarchic model which disempowers older women, to a more feminine, holistic model". Support for CAM is part of a much wider "esoteric, mystical galaxy" of ideas, where alternative medicine, meditation forms, yoga etc, a culture of a quest of feeling better, getting its source in religious, medical, scientific social and psychological sources (Renschhausen & Wirtz, 1999; Ruano-Borbalan, 1995). Benoist (1983) sees it as stemming from a yearning for transcendence. Whilst belief in the material nature of the universe is widely shared, the yearning for something that transcends that materiality is evoked especially when the individual feels himself its "plaything" (p. 103), as when their body fails them.

Of particular interest is the specific claim that explains the rise of CAM as a consequence of attraction to the occult and the paranormal. For instance, Baum (1989) attributes the support for CAM to credulous belief in occult or paranormal and Happle (2000) brands it a victory of "oracling irrationalism, a revival of romanticism". Many studies established that belief in the occult is widespread, and on the increase in the West. Michelat (1993), for instance, found in a representative sample in France that belief in the capacity to predict the future by astrological means has increased from 23% in 1982 to 29% in 1993. According to him, beliefs in the paranormal etc are not perceived as contradictory with science, as believers are convinced that in due course, science will validate the techniques and interpretations held, and the same may be true of beliefs in CAM that medical science has failed to substantiate. Further, he observed that beliefs in the paranormal are more widespread amongst the young (42 %) as against 20% amongst those older than 65. In the United States, a recent Gallup poll of a randomly selected national sample of 1,012 adults, 18 years and older (Newport & Strausberg, 2001) concluded that Americans' belief in psychic and paranormal phenomena is up over last decade. In Israel, Cannetti and Pedahzur (2000) document a high degree of belief in a wide

range of paranormal phenomena amongst Israeli students, with marked differences in the contents of the beliefs depending on their background. Some examples of the pervasiveness of such beliefs: the belief rate in palm-reading was around 20%, that in the power of blessings by rabbis and cabbalists around 25%, and depending on the subpopulation, belief in astrology hovered around 30%, with women much more likely (45.5%) than men (21.4%) to have faith in it.

However, the *link* between CAM and the (undoubted) rise of belief in the esoteric and the occult has not been much investigated, and such evidence as there is, is ambiguous. A study by Furnham (2000) in the UK concluded that belief in CAM is unrelated to belief in what he dubbed "future-ologies" (i.e., astrology, graphology, palmistry etc). Verheij, de Bakker and Groenewegen (1999), who tried to account for the patterns of beliefs in CAM in various regions in the Netherlands, strongly linked paranormal healing with religion, whereas amongst the many paranormal beliefs studied by Newport and Strausberg (2001) paranormal healing was not associated with religion.

Previous researchers also investigated a range of demographic factors, but here too findings have not been consistent. Regarding *age*, Furnham and Kircaldy (1996), working with German respondents, saw that older respondents turn more readily to CAM, a finding replicated by Mokoukolo & Mullet (1999) in France. On the other hand, Bernstein & Shuval (1997) found no effect of age in Israel, nor did Rawsthorne et al. (1999), working in Cork, Los Angeles, Stockholm, and Winnipeg. Most studies report that women are more likely than men to consult an alternative medicine practitioner (Millar, 1997; Bernstein & Shuval, 1997; Eisenberg et al, 1998, Gaylord, 1999), as they do for conventional medicine practitioners, but others (Rawsthorne et al, 1999) found no such effect, and Furnham (2000) reported a more complex picture.

The same obtains regarding *income*. Thus, Bernstein and Shuval (1997) report no difference between users and non-users of CAM in terms of economic status. Rawsthorne et al (1999) found that respondents were more likely to use alternative medicine if they were single, in a higher income bracket, and an urban dweller and Sharma (1992) found that respondents with a higher income were more likely to use CAM. Only the effect of *education* appears clear. Studies consistently found that consulters had a higher level of education

than non-consulters (Astin, 1998; Bernstein & Shuval, 1997; Sharma, 1992)

Summarizing, the present study was designed with a double objective: We aim to characterise the structure of the belief system, that is, to determine to what extent belief in a given statement about CAM implies belief in others, what other beliefs tend to be associated with it. The second purpose was to test whether support for CAM is part of a wider set of beliefs, not necessarily related to health care. This will require going beyond facile associations, and separate the relations of CAM to demographic and belief variables, in order to assess the importance of each.

Method

Informants and Procedure The study relies on 403 questionnaires (after weeding out incompletely filled ones), out of which 150 were administered in alternative medicine clinics, and the rest to a convenience sample of respondents in various public places. This sampling plan was used to guarantee sufficient numbers of CAM consulters to allow meaningful regression analyses. Respondents were interviewed individually. They were told "your answer will enable us to increase our knowledge of the views of the public on this important topic" and assured that "in this domain, there is no solid knowledge; there is no single agreed correct answer to the questions appearing in the questionnaire". Anonymity was promised. In the clinics, the researchers obtained permission from the clinic management, and respondents approached in the waiting room. In all cases respondents answered the questionnaires themselves, with the interviewer at his or her side to answer questions. Some of the questionnaires in the clinics were completed in two parts, before and after the patient was seen by the practitioner.

Here follow some demographic characteristics of the population, based on self-report: Gender: Male 160, Female 243; Age: Mean 32.5, S.D. 13, Range 17-- 72.; Schooling: Mean 13, S.D. 6.05; Living Location: Urban: 348, Rural: 53; Religiosity: Orthodox: 29; Traditional: 134; Secular: 238; Mean monthly income 5,800 NIS (about 1500 US\$ at the time); number of cellular phone owner: 276 (about the national proportion); number connected to the internet: 131 (*ditto*).

The questionnaire. Our questionnaire had three parts (see Tables 1 and 3 below). The first part counts 63

questions, and probes the various domains of alternative medicine, as well as beliefs and attitudes towards medicine in general. Every question consists of a statement and a five point Likert scale, labeled: *definitely agree, tend to agree, tend to disagree, definitely disagree*, and a fifth category labeled “*I have no knowledge on this subject*”. These were coded numerically as -2,-1,1,2 and 0, respectively. The second part asks nine forced-choice questions, six regarding various occult and paranormal topics, and three concerned with scientific and technological advances. The last part of the questionnaire consists of nine demographic questions.

Results

Patterns of beliefs. Table 1 gives the degree of support for the various statements in Part 1, after appropriate reverse coding (statements 17, 18, 46, 54, 63). Cronbach's alpha for this part is 0.87, average inter-item correlation is 0.11, and average item-total correlation is equal to 0.30.

Insert Table 1 about here

In order to obtain an initial first picture of what beliefs cohere, we computed a distance function between any two statements based on the pattern of support, using the five-point scale. Proximity between two statements was defined as the Pearson r correlation between them across all respondents, and conversely, the distance between any two statements was computed as $[1 - r]$. This specific distance measure was selected since our purpose was to regroup beliefs that cohere across the population, rather than those that enjoy similar support.

Insert

Figure 1 about here

Taking this distance measure, we subjected the statements to a Multi Dimensional Scaling (MDS). This procedure attempts to minimise the differences between the reproduced distances and a monotonic

transformation of the input data, that is, the program attempts to reproduce the rank-ordering of the input distances or similarities (Borg and Lingoes, 1987; Guttman, 1968). With two dimensions, a moderate stress obtains (D-star: Raw stress = 213; Alienation = .29). As may be seen from Figure 1, beliefs relating to the same technique cluster rather tightly, which justifies the combination of statements concerning each technique so as to obtain stable indices. We shall presently pursue our analysis on the basis of the commonalities in the beliefs, but first, we observe that there are genuine differences in support for the various statements within each category. Looking at the statements in each category, one readily perceives that not all statements enjoy the same support. Taking for example acupuncture, we find markedly different values for the three statements pertaining to it. Acupuncture is seen as helpful for back pain (statement #48, mean support = 0.48); far less for acute pain (#42: 0.28) and even less for slimming (# 59: 0.14). A similar pattern is found regarding the usefulness of reflexology for stress (# 60: 0.46); headaches (#47: 0.41), “for many problems” (# 55: 0.34) and for skin problems (#41: -0.11). Yoga is more useful for stress (# 58: 0.83) and concentration (#50: 0.71) than for general health (#46: 0.38) or spiritual well-being (# 39: 0.22), while homeopathy is thought to be helpful for allergies (#20: 0.41), far less for the ‘flu (#9 : 0.19) and not at all for cancer (#3 :-0.08).

Whilst these nuances imply that subjects do not support techniques indiscriminately, we saw earlier that it is legitimate to regroup statements by techniques: since subjects who support some statements on the effectiveness of, say, acupuncture, tend to give more support to other statements involving acupuncture, it makes sense to regroup all of them into one category.

The next step was to look at the degree of support for the various approaches, as reflected in the scores in these categories (Table 2). One observes the strongest support for appropriate nutritional and dietary supplements (including herbs); then come yoga and meditation; the techniques based on manipulations follow, then homeopathy; there is little support for shiatsu, and most people do not have faith in the alleged

powers of magnets¹. To summarise the analysis so far, beliefs tend to cluster around specific techniques, with different degrees of beliefs for the different techniques.

Insert Table 2 and Figure 2

We next ran a MDS in order to see how the various techniques relate to one another. To this end, we again computed the Pearson correlations, this time between every two categories, and used $(1 - \text{Pearson } r)$ as our measure of distance. The resulting 2D MDS is presented in Figure 2 (D-star: Raw stress = 7.34; Alienation = .19). In order to facilitate the interpretation of the dimensions, we incorporated in the variable sets two particularly telling statements. These are “hands” (#8 “*some people are able to cure illnesses by the touch of their hands*”) and aura (#25 “*There is an energetic field around the human body, by way of which it is possible to heal the person*”). Inspection of this figure leads us to suggest three poles that we named *Powers*, *Healthy Lifestyle* and *Stress*, respectively. The “powers” account sees treatment as a matter of activating various powers. Special techniques or materials—imposition of hands (“healing”), aura, shiatsu, reflexology, and magnets—release or apply those powers to cure the ill. The ‘healthy lifestyle’ account stresses the wisdom of adopting a ‘healthy lifestyle’ in order to achieve and maintain good health and to prevent illness. This head covers the categories of nutrition, vitamins, and ‘natural eating’ (Renschhausen & Wirtz, 1999). It is very telling to follow the direction indicated by the arrow on the figure. Starting from healthy nutrition, we move to vitamins (powerful nutrients); then to the use of herbs, leaves etc, which are healthy, natural, and have various powers; and lastly to homeopathy, where the powers of these herbs is purified and manifest even in minute quantities, and precautions must be taken in handling those powers (such as avoiding to touching them with the hands). The last two groups of beliefs rely on the usage of plants. But in the case of

¹ These two techniques are uncommon in Israel, and respondents selected the “Don’t know” option more often than for the other techniques

herbal medicine, it is closer to the pole of healthy, natural living, along with good nutrition and useful vitamins, while homeopathy is further along this dimension in the direction of special powers.

The third account is the 'stress' account, in which the individual is seen to be under threat and attack from germs and diseases, interpersonal conflicts and the 'stress' of modern life acting upon the body through the 'mind'. (Ruff, 1992) This is where yoga and meditation cluster, perceived as spiritual well-being through relaxation

It is illuminating to compare these accounts of CAM with those identified by Stainton-Rogers in the context of conventional medicine, and which informed our analysis. Stainton-Rogers (1991; Furnham, 1994) identified no less than seven accounts. The present study does not allow such fine differentiation, but some revealing parallels suggest themselves. What we called the Powers accounts fits her 'body as machine' account, which sees illness as "real" and occurring naturally. With conventional medicine, biomedicine is seen as the only valid source of effective treatment for any kind of serious illness. In the context of alternative medicine, this position may correspond to activating various powers, conceived as equally objective.

What we called the Healthy Lifestyle corresponds closely to Stainton-Rogers's 'health promotion' account, but may also be combined with the 'God's power' account, within which health is a product of 'right living', spiritual well-being and God's care, health being seen as a retribution for healthy living. Finally, our 'Stress' account fits her 'body under siege' account, but also perhaps her 'willpower' account, which views the individual as prominently in control, and stresses the moral responsibility of the individual to use their 'will' to maintain good health.

Relations to "non-therapeutic" beliefs. Up to now, the MDS brought to light the way beliefs in individual *beliefs* cluster together, and this involved clustering columns in our database. We next attempted to see how the *population* was structured (the rows in our database). As we saw in the introduction, it has often been claimed that acceptance of CAM stems from disenchantment with conventional medicine. To test this and related contentions, we performed a factor analysis and a "scree" test over the rows, and found that a single factor was responsible for the inter-subject differences. Further, clustering the subjects, whether in 2 or

3 groups, and comparing the profile of their answers over the various category totals failed to reveal any pattern: the profiles of beliefs are parallel, indicating that the differences between groups of subjects consist merely in greater or lesser support for all techniques, without differences in pattern. This mandated us to compute a single index to reflect the degree of support for alternative medicine, TOT_ALT: the mean degree of support for all the statements subsumed under the alternative medicine categories.

Next, we turned to compute the correlations between attitudes to conventional medicine and TOT_ALT. Three of our questions specifically address putative shortcomings of conventional medicine. The correlations, though weak, proved consistent and statistically significant: #15 *Treatments not based on modern scientific research are useless* ($r = -.16$, $p = .001$, mean = -0.56); #17 *Many of the treatments of conventional medicine do more harm than good* ($r = .18$, $p < .001$, mean = 0.319); #27: *Treatment requires good medication more than anything else* ($r = -.11$, $p = .031$, mean = 0.09). When the three variables are combined into a new variable (with appropriate sign reversal), its correlation with TOT_ALT is $r = .15$ ($p = .003$). CAM users believe that conventional medicine does not have all the answers, and their turning to CAM is associated with doubts and misgivings about conventional medicine, and is not only related to their sympathy for an alternative approach. The questionnaire also includes a single, very basic statement about the physician/patient relation: #2 *Physicians care about the health of their patients*. This too had a positive correlation with TOT_ALT ($r = .118$, $p = .018$).

Several statements in the questionnaire relate to various beliefs and values, and we checked the correlations between support for them and TOT_ALT: # 21 *Eastern culture possess a great deal of special knowledge that could contribute to western culture* ($r = .49$, $p < .001$); # 24 *Alternative medicine is superior because it is based on centuries-old knowledge* ($r = .26$, $p < .001$); # 30 *It is important to buy "environmentally friendly" products* ($r = .35$; $p < .001$). All three correlations are substantial and highly significant, confirming that support for CAM is not a phenomenon exclusively related to medicine, but partakes of a wider cultural trend.

The realm of the paranormal. Amongst the beliefs claimed by previous researchers to be related to

support for CAM, faith in the paranormal is of especial interest. The central question is whether patients turn to CAM as an alternative therapy, not different in essence from conventional medicine, to increase their chances of relief when conventional medicine fails to satisfy them; or whether the decision to try an alternative therapy represents a change of mental set, an experience akin to attraction to the paranormal and the occult. Part 2 of the questionnaire included nine forced-choice questions about various paranormal conceptions, along with three questions of a more technological/scientific flavour. The purpose of the latter was to blur to some extent the purpose of this part, as we feared that some of the respondents would not answer candidly in case they perceived the questionnaire as one asking in effect “to what extent do you hold preposterous beliefs” — a situation that could easily obtain in case a respondent supports only few of the statements in this part while firmly rejecting the others.

Insert Table 3 about here

Table 3 details the degree of acceptance of the various statements, which range roughly between one and two thirds of the respondents, depending on the statement. We then determined the internal structure of this set of beliefs by running a hierarchical cluster analysis. We took once more [1-Pearson r] as the distance metric, and used Ward’s method, designed to minimise intra cluster variance and maximise inter-cluster variance at each step (see Figure 3).

Insert Figure 3 about here

The statements fall into two groups, as intended. The top six questions related to the occult and the paranormal cluster together, as do the remaining three (the question on UFOs is somewhat closer to the paranormal cluster; see Patry and Pelletier, 2001). Further, the questions on the paranormal are seen to go by pairs: the first pair (Zodiac and couples) concerns astrology; the second (coffee and cards) relates to divination while the last (blessings by Rabbis and red ribbons) involves blessings and curses (the "evil eye"). We defined a new variable “PARANORM” as the average support for these six statements.

At long last, we are in a position to answer the question as to the strength of the relation between beliefs in the occult and support for CAM. This can be done by computing the Pearson correlation between TOT_ALT and PARANORM. That correlation proved sizeable ($r=.25$) and highly significant statistically ($p<.0001$). We conclude that the more people believe in paranormal phenomena, the more they are attracted to CAM.

Demographics. We saw in the introduction that the effects of various demographic variables on support for CAM are inconsistent across studies. The differences may be genuine and due to cultural differences, but they may be due to interactions between variables, and to the different subsets of variables used in every study. Further, it is well-known that several of those variables are correlated. In order to identify and separate the causal factors, these correlations must be integrated in the analysis.

Insert Table 4 and Table 5 about here

Table 4 summarises the correlations between the continuous demographic variables and our main indices, PARANORM and TOT_ALT. Age, Education and Income are positively correlated with one another, and so are PARANORM and TOT_ALT. Further, the correlations between members of the first group and PARANORM are negative, and those with TOT_ALT are inconclusive. In view of this pattern and in order to achieve as valid results as possible, we investigated the effects of all our main variables (PARANORM, Age, Income, Education, Gender and Religion) on TOT_ALT by a Generalised Linear Model analysis. This enabled us to isolate the effects of the individual categorical and continuous variables on the degree of acceptance of CAM and control for their correlations with the other variables.

Three of the variables turn out to affect support for CAM significantly (see Table 5), namely PARANORM, Gender and Age. In terms of the more familiar correlation coefficients, support for CAM is positively correlated with belief in paranormal phenomena, (Pearson $r= .25$); the effect of Gender is in the direction suggested by the literature: The mean support among women is .47 against .37 among for men. Correlation with Age is very small (Pearson $r= .09$). Finally, Income, Education and Religion did not even approach significance, and neither did the interactions that could be computed.

This important result relates to support for CAM as a whole. However, we saw that CAM is not all of one

piece for our respondents; different techniques may therefore exhibit different correlations with the demographic variables. As a telling (because extreme) example, we checked whether Imposition of hands ('healing') could be predicted by the variables Gender, Education, Income, Age, and PARANORM. When we ran a Generalised Linear Model, we found this time that the effects of PARANORM ($p < 0.002$) and age ($p = 0.05$) were again significant. Whereas Gender was not significant in this analysis, Income was ($p = 0.0064$). Education is not individually significant, once income is taken into the equation. In terms of correlations, imposition of hands (healing) is positively correlated with PARANORM (Pearson $r = .16$), its correlation with income is of the same magnitude, but is in the opposite direction $r = -.16$; that with age is positive too, but very small ($r = .04$)

In view of this, we computed the correlations between each of the various techniques and the main demographic determinants. As may be seen from Table 6, Education is positively correlated with some of the techniques, and negatively with some of the others, which explains why it is not significantly correlated with TOT_ALT. The pattern for the effects of Income and Age are different. The overall correlation of these variables with TOT_ALT is not significant either, but Income and Age are weakly correlated with each of the techniques. In plain terms, Education is an important, albeit unpredictable factor in understanding support for CAM; Income and Age are of little import.

Insert Table 6 about here

Conclusions

Many factors jointly affect belief in CAM. This study set out to characterise the structure of the belief system underlying support for CAM, that is, to determine to what extent belief in a given statement about CAM implies belief in others, and what other beliefs tend to be associated with it. The second purpose was to test whether support for CAM is part of a wider set of beliefs, not necessarily related to health care.

The set of beliefs was found to exhibit a clear pattern, organised around specific techniques. People who trust a given technique tend to see it as useful for a range of conditions, though not all to the same extent.

Beyond these specific techniques, beliefs also cluster in terms of a general orientation to alternative medicine. Following Stainton-Rogers, we identified clusters based on the concepts of Powers, of Healthy Living, and of Stress.

We were able to confirm the embedding of support for CAM in a wider constellation of beliefs and values. Espousal of CAM is related to dissatisfaction with conventional medicine, with support for ecologically responsible behaviour, and with respect for what is perceived as the age-old wisdom of the East. We paid especial attention to belief in the paranormal, and here too found a solid link between support for such beliefs, and support for CAM. All these forms of support share an underlying framework of demedicalization. Thus, our findings show a combination of support for New Age ideological cultural themes (which validates the ideological, demedicalization thesis) and differentiated commitment to specific CAM techniques, seen as useful for a range of conditions, and related to general explanatory stances in the therapeutic domain.

The picture concerning the effect of demographic variables was also clarified. The only variables that affect the overall support for CAM are gender (more support among women than among men) and age (a weak positive correlation). When we analyzed techniques separately, however, a more differentiated picture emerged. In particular, Education is positively correlated with some of the techniques, and negatively with some of the others, and this is why the correlation with overall support for CAM is not significant. It is likely that a more detailed investigation of the reasons for the relations between education and specific beliefs will prove rewarding. This could for instance bring out the changing relation to rationality as a function of education, a relation that is probably not monotonic. However, the present study does not allow us to pursue this further.

Despite the differences between respondents, it did not prove possible to cluster the respondents into types. Our analyses reveal a single dimension—support for CAM—with no selective differentiation across techniques. The failure to find distinct types suggests that the attitudes measured combine dissatisfaction with biomedicine and ideology in a pragmatic blend. As Gray (1999) observes "Postmodernism is characterised by relativism, namely that there are no such things as objective facts and that reality has a plurality of

meanings and is contingent" but goes on to state that "and although many different theories are encompassed by the term "postmodernism", a suspicion of science lies at the core of such theories." However, these two components, relativism and suspicion of science, do not imply each other. For instance, Siahpush (1999a) found that the prevalence of anti-science sentiments, expected on the basis of claims such as Gray's, was absent in his Australian sample: over 80% of respondents did have faith in the ability of science to "provide us with a better life" and over 95% of them believed that scientific medicine has been "effective in curing disease." (see Alami, 2002) The plurality of postmodernism makes it natural to *combine* CAM and conventional medicine, a trend common in Western countries (Green 1996, Astin 1998, Williams and Calnan 1996). These findings are congruent with a post-modern interpretation that emphasises the process of "de-differentiation" or blending of high and low, scientific and popular, ideological and practical.

The cognitive approach we presented in this paper seeks to explain why beliefs tend to cluster around particular techniques, and the overall relations these clusters entertain with one another, as derived from their reliance on distinct modes of understanding causality in the therapeutic domain. The sociological approach seeks to account for broader influences that cause beliefs about CAM to cohere over and beyond the specific clusters. Finally, the dual nature of CAM, that involves both a praxis and theoretical constructions, may explain how the two types of influences jointly shape the overall constellation of beliefs.

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Figure Captions

Figure 1 – Multi Dimensional Scaling of all questions in Part 1

Figure 2 - Multi Dimensional Scaling of categories (Part 1)

Figure 3 - Hierarchical Clustering Tree (Part 2)

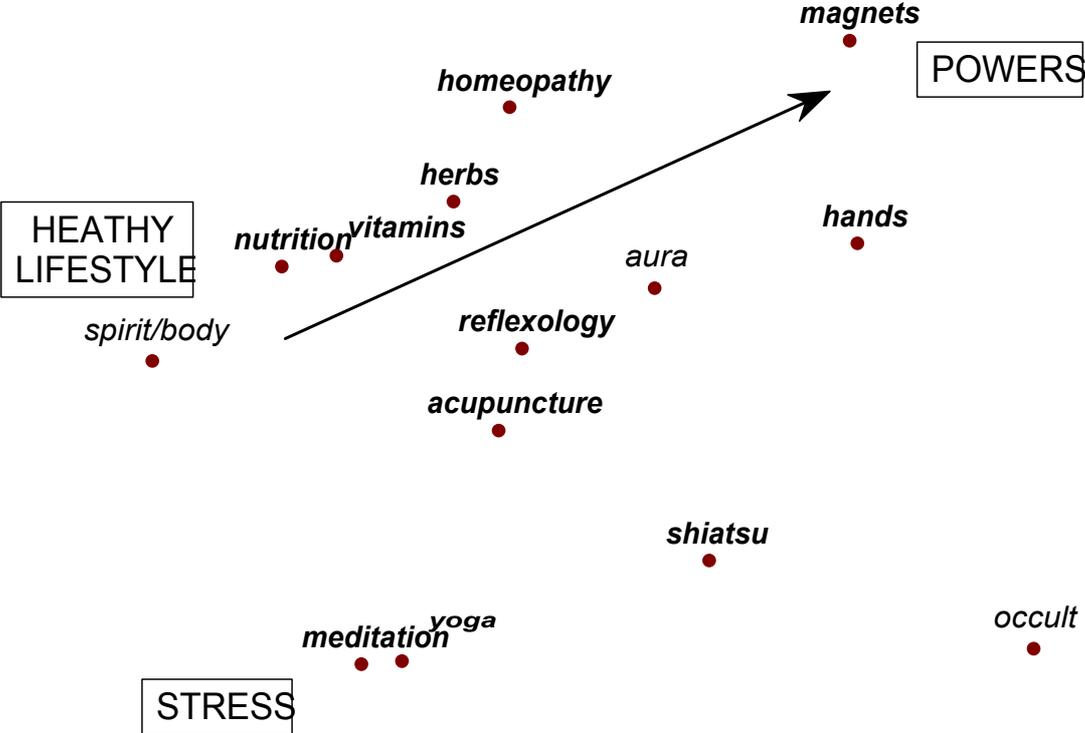


Figure 2 - Multi Dimensional Scaling of categories (Part 1)

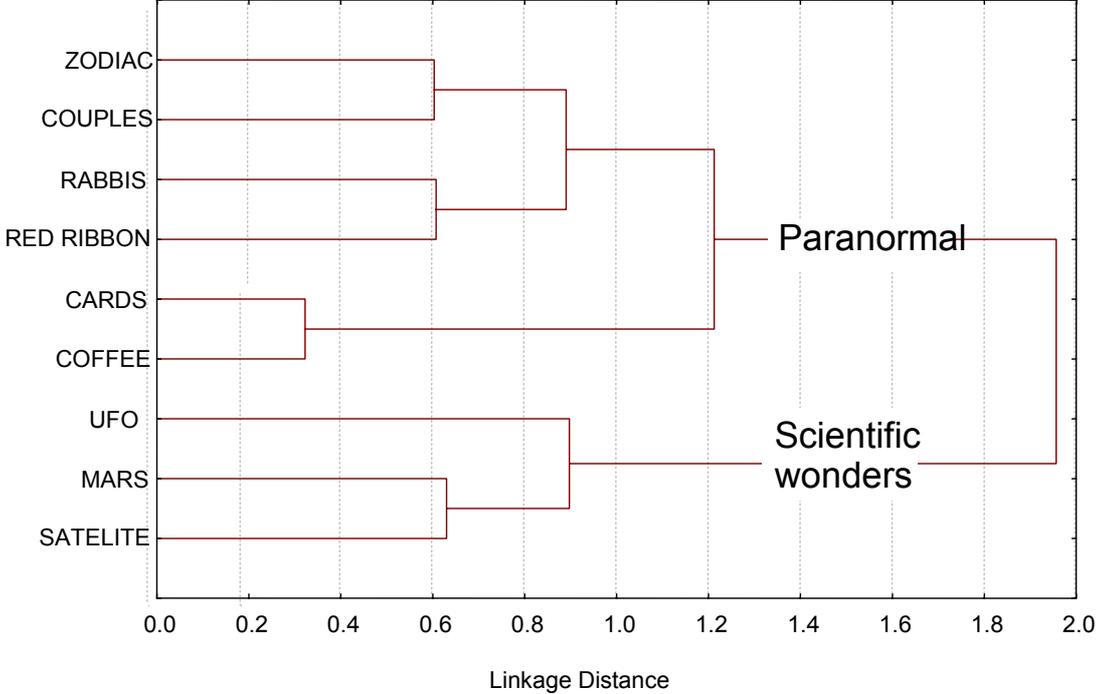


Figure 3 - Hierarchical Clustering Tree (Part 2)

Table 1. Questionnaire Part 1 - Mean answers

#	Name	Description	Mean	SD
1.	HERB1	Herbal tea is good for health	1.02	0.83
2.	DR_CARES	Physicians care about the health of their patients.	1.01	0.99
3.	HOMEO3	Homeopathy helps in treating cancer	-0.08	1.00
4.	NUTR1	Healthy eating helps preventing illness	1.49	0.73
5.	HERB2	Herbal cosmetic prevent skin aging	0.49	1.07
6.	SPIRIT2	The will to live important in serious illness	1.40	0.93
7.	NUTR5	Food containing vegetable fat reduces the risk of heart attach, and is therefore to be preferred over food containing animal fat	0.77	1.10
8.	ENERGY2	Some people are able to cure illnesses by the touch of their hands	-0.26	1.30
9.	HOMEO2	It is possible to treat flu by homeopathy	0.19	1.04
10.	SPIRIT4	Alternative medicine treats spirit and body together, and this is why it is so effective	0.62	1.03
11.	NUTR7	Natural food supplements helps correct environmental pollution and processed food	0.43	1.04
12.	VITAM2	I believe it is worthwhile to eat a certain amount of vitamins.	1.00	0.53
13.	ALTCONV5	Some alternative medicine methods are completely useless	0.29	1.06
14.	SPIRIT3	The key to a healthy body health is a healthy mind	1.19	0.70
15.	ALTCONV9	Treatments that are not based on modern scientific studies are useless	-0.56	1.28
16.	NUTR4	It is better to consume vegetable fat than animal fat	0.84	1.14
17.	ALTCONV4	Many of the conventional medications do more harm than good *	0.32	1.20
18.	ALTCONV1	Only naive folk turn to alternative medicine *	1.10	1.10
19.	VITAM4	Minerals supplements are important because they strengthen the immune system	0.72	0.97
20.	HOMEO1	It is possible to treat allergies by homeopathy	0.41	1.02

21.	WISDOM	Eastern culture possess a great deal of special knowledge that could contribute to Western culture	0.88	0.95
22.	SICKNESS	I believe that illness is an inseparable part of life	0.58	1.35
23.	NUTR8	I think that a vegetarian diet is healthier than one containing meat	0.20	1.35
24.	WISDOM2	Alternative medicine is superior because it is based on centuries-old knowledge	-0.27	1.18
25.	ENERGY1	There is an energetic field around the human body, by way of which it is possible to heal the person	0.30	1.05
26.	NUTR3	It is important to check nutritional value of the food you eat	0.90	0.55
27.	ALTCONV6	Treatment requires good medication more than anything else	0.09	1.36
28.	NUTR2	Fiber-enriched food improves digestion	1.09	0.96
29.	LIFESTL1	Preserving your health throughout your life will avoid illnesses when you grow old	0.79	1.24
30.	ECOLOGY	It is important to buy “environmentally friendly” products	0.95	1.08
31.	NUTR6	Brown sugar is healthier than the regular kind	0.58	1.13
32.	ALTCONV8	One should turn to alternative methods when the conventional ones fail.	-0.38	1.27
33.	SPIRIT1	A person’s mental state is an important determinant of his health	1.42	0.88
34.	VITAM5	Sulphur baths provide relief for rheumatism	0.66	0.87
35.	LIFESTL2	Life is too short to waste it on worrying about what is and what isn’t healthy	-0.47	1.49
36.	NUTR9	Eating organic vegetables prevents cancer	0.07	0.97
37.	HERB6	Chemistry-based drugs have more ill side effects than medicinal herbs	0.49	1.10
38.	SHIA2	Shiatsu prevents illnesses	0.08	0.86
39.	YOGA4	It is important to practice yoga so as to strengthen the body, and make it a suitable vessel for the spirit	0.22	1.09
40.	MAGNT2	Magnetic bracelets are helpful for various ailments.	-0.28	1.01
41.	REFLEX4	Reflexology can help with skin problems, such as acne	-0.11	0.94
42.	ACU2	Acupuncture eases acute pains, such as after surgery	0.28	0.99
43.	VITAM3	Vitamin c tablets prevent colds	0.80	1.03

44.	VITAM7	Spring water help protects cells and tissues	0.14	0.92
45.	VITAM1	Various vitamin supplements strengthen the body	1.02	0.97
46.	YOGA3	Yoga only helps to stay supple, but does not contribute to health *	0.38	1.06
47.	REFLEX2	It is possible to treat headaches with reflexology	0.41	0.91
48.	ACU1	Acupuncture can cure back pain	0.48	0.98
49.	MEDIT1	Meditation helps cope with everyday pressure	0.82	0.97
50.	YOGA2	Yoga exercises are helpful for concentration, and therefore for everyday functioning	0.71	0.94
51.	HERB4	Bach flowers are helpful for a range of heath problems	0.19	0.81
52.	MAGNT1	Magnetic bracelets can prevent headaches	-0.27	0.88
53.	HERB5	The echinea flower cures 'flu	0.14	0.78
54.	SHIA3	Shiatsu is useless for serious problems *	-0.01	0.90
55.	REFLEX3	It is possible to treat many problems with reflexology	0.34	0.93
56.	SHIA1	Shiatsu contributes to health by helping the body energies flow more freely	0.22	0.88
57.	MEDIT2	Meditation lowers blood pressure	0.46	0.93
58.	YOGA1	It is possible to lower stress by doing yoga exercises	0.83	0.92
59.	ACU3	Acupuncture is helpful for reducing weight	0.14	1.11
60.	REFLEX1	Reflexology can help reduce stress	0.46	0.97
61.	HERB3	The use of appropriate herbal essences prevents illnesses	0.34	1.02
62.	VITAM6	Mineral waters are important for the body because they contain a high concentration of minerals	0.48	0.99
63.	MEDIT3	It does not stand to reason that meditation can significantly improve quality of life *	0.25	1.10

* Starred questions are reverse coded; variable names are used in Figure 1. The scale ranges from -2 to +2.

Table 2. Support for the various categories

Name	Mean	SD
Nutrition	.71	.55
Vitamins	.69	.53
Herbs	.58	.62
Yoga	.53	.73
Meditation	.51	.74
Superstition	.41	.20
Acupuncture	.30	.80
Reflexology	.28	.65
Homeopathy	.17	.77
Shiatsu	.09	.56
Magnets	-.27	.81

***The scale ranges from -2 to +2.**

Table 3. Support for questions in Part 2

Code	Statement	% agree
Satellite	During the next war, satellites will be used as weapons	62
Rabbi blessing	Saintly men can help people by giving them their blessing	57
Zodiac sign	The sign under which a person is born determines a great deal in his life	54
Go to Mars	I believe man will step on Mars within ten years	51
UFO	I believe in UFOs	37
Coffee	It is possible to obtain information on people by coffee reading.	33
Cards	It is possible to predict a person's future by cards reading	30
Red ribbon	A red ribbon on the wrist can fend off the evil eye	RIBB
Astrology couple	An important factor in the selection of a mate is the correspondence between their astrological signs	25

Table 4. Correlations between demographics

	PARANORM			
TOT_ALT	.25*			
	<i>p</i> < .001*	TOT_ALT		
Age	-.09	.09		
	<i>p</i> = .07	<i>P</i> = .08	Age	
Income	-.11*	-.06	.15*	
	<i>p</i> = .03*	<i>P</i> = .25	<i>p</i> = .004*	Income
Education	-.14*	.08	.33*	.17*
	<i>p</i> = .007*	<i>p</i> = .14	<i>p</i> < .001*	<i>P</i> < .001*

Table 5. Generalised Linear Model Results

Effect	Wald Stat.	<i>p</i>
PARANORM	29.95	<.001 *
Age	4.96	.025 *
Income	.87	.351
Education	2.32	.128
Gender	10.81	.001 *
Religion	1.15	.283

Table 6. Correlations between techniques and demographics

Variable	AGE	INCOME	EDUCATION	PARANORM
Herbs	-0.02	-0.08	-0.11 *	0.07
Shiatsu	0.02	-0.09	-0.06	0.25 *
Magnets	-0.01	-0.13 *	-0.06	-0.17 *
Vitamins	0.08	0.03	-0.03	0.12 *
Acupuncture	0.03	0.06	0.05	0.16 *
Homeopathy	0.06	-0.06	0.06	0.12 *
Yoga	0.03	-0.04	0.09	0.15 *
Reflexology	0.09	0	0.13 *	0.12 *
Nutrition	0.20 *	0	0.14	-0.04
Meditation	0.05	0.01	0.16 *	0.12 *
TOT_ALT	0.07	-0.05	0.03	0.25 *
PARANORM	-0.09	-0.11 *	-0.14 *	

*Starred correlations are significant at $p < .05$ (N=385, casewise deletion of data)