Research on Relationship-Centered Care and Healthcare Outcomes from the Rochester Biopsychosocial Program: A Self-Determination Theory Integration

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Researchers in the Program for Biopsychosocial Studies at the University of Rochester have applied quantitative and qualitative research paradigms to explore the healthcare outcomes associated with relationship-centered patient care. Studies converge to show that when primary care physicians are more relationship-centered (versus physician-centered) patients are likely to display higher satisfaction, better adherence to prescriptions, more maintained behavior change, better physical and psychological health, and to initiate less malpractice litigation. Further, when patients' families have more positive interactions, patients have better physical and psychological health and less healthcare utilization. The results, which are integrated with the self-determination theory concepts of autonomy support and autonomous motivation (Deci & Ryan, 1985), highlight the importance of physicians considering psychological and social factors in providing effective healthcare to patients and their families.

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While much of the medical profession has continued to focus primarily on biomedical causes and treatments for disease (Glass, 1996), there is growing recognition among some physicians that psychological and social factors in the healthcare setting, as well as in patients' families, can significantly influence important healthcare outcomes (e.g., Cassell, 1985; Quill, 1983). These physicians argue that it is possible to help prevent and ameliorate illness by being more compassionate in applying biomedical knowledge and by paying greater attention to family dynamics.

Physicians who attend to such factors are often said to be "patient-centered" (Laine & Davidoff, 1996; Stewart, Brown,

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et al., 1995), and although that is an apt description, we prefer the term "relationship-centered" (Tresolini et al., 1994) because it gives a bit more emphasis to the fact that physicians and patients, and in some cases the patients' families, need to have a *partnership* (Suchman, Botelho, & Hinton-Walker, 1998) in which they work together toward agreed upon goals related to preventing or treating illness, or coping with untreatable illness and ensuing death (Quill, 1993). The relationship-centered approach involves physicians understanding the patients' perspectives, being responsive to the needs of patients (and in some cases their families), and sharing treatment-relevant power with patients and their families. However, it also highlights that doctors are not "turning over control to patients" (Glass, 1996, p. 148), or to their families.

In a typical relationship-centered consultation, physicians, patients, and at times other family members would discuss and negotiate relevant issues (Quill & Brody, 1996). The physicians' responsibilities would involve taking the patients' frame of reference and offering treatment choices, but it could also include behaviors such as respectfully educating patients who have insufficient or inaccurate information, prescribing specific patient behaviors if the patients' capacities and desires warrant it, and facilitating healthier family interactions.

The Biopsychosocial Model

The relationship-centered approach has its roots in the biopsychosocial model of medicine introduced by Engel (1977). The model is defined in terms of general systems theory (von Bertalanffy, 1968) and suggests that every level of organization—including molecular, cellular, organic, personal, experiential, interpersonal, familial, societal, and biospheric—affects every other level. The patient-physician relationships (the interpersonal level) and patient-family relationships (the familial level) are, accordingly, understood to influence patients' health (the cellular and organic levels) as well as their functional status and well-being (the personal and experiential levels). With this set of hypothesized biopsychosocial relations providing the basis for the relationship-centered approach, much of the teaching and research that has evolved out of the biopsychosocial model has focused on physician-patient-family interactions as they affect patients' healthcare outcomes.

Although the relationship-centered approach can be justified on grounds of clinical experience (Laine & Davidoff, 1996), empirical investigations are essential for establishing clear linkages between relationship-centered care and outcomes such as physical and mental health, functional status, and healthy behavior (Schwartz & Wiggins, 1988). As Inui and Carter (1985) explained, physicians are not likely to change their behavior unless research can show direct relations between specific aspects of the patient-physician interaction and significant changes in medically-relevant patient states.

This article reviews studies done within the University of Rochester's Program for Biopsychosocial Studies, founded by Engel, and shows the direct relations emphasized by Inui and Carter. Specifically, the studies have established a clear association between the quality of patient-physician interactions and healthcare outcomes such as patient satisfaction, health-relevant behavior change, medication adherence, health status, and healthcare utilization. The article also reviews studies that link the quality of patient-family interactions to healthcare outcomes thus emphasizing that it is sometimes important for physicians to involve patients' family members more fully in providing the patients with optimal care.

The studies reviewed in this paper vary in two noteworthy ways. First, some employ quantitative paradigms while others employ qualitative paradigms, and second, some are strongly theory-driven, organized and guided by self-determination theory (Deci & Ryan, 1985), while others are more inductive and were not designed to test specific theoretical propositions. We believe that these different approaches to exploring similar healthcare phenomena are complementary and that the compatible results from the studies using such different methodologies provide greater validation of the relationship-centered approach. Although the languages of relationship-centered care and self-determination theory are different, the two languages convey similar ideas, and our aim is to show their convergence. Thus, we begin by outlining self-determination theory and reviewing the research designed to test the theory in healthcare settings. We then move on to the other areas of research which we interpreted in terms of the theory.

In reviewing the research on relationship-centered care and healthcare outcomes we focus primarily on outcomes related to chronic diseases and health-compromising behaviors where the outcomes are a strong and direct function of people's behavior. Some studies have used physiologic measures to assess health outcomes (e.g., glycosylated hemoglobin), yet these measures were selected because of their relation to patient behaviors that can be influenced by relational factors.

Self-Determination Theory

Self-determination theory (Deci & Ryan, 1985; Williams, Deci, & Ryan, 1998) is a model of human motivation that is relevant to understanding the link between relationship-centered care and patients' motivation, behavior, family dynamics, health, and well-being.

One of the central concepts in the theory is *autonomy support* which, in the realm of healthcare, refers to providers' interacting with patients by taking full account of their perspectives, affording choice, offering information, encouraging self-initiation, providing a rationale for recommended actions, and accepting the patients' decisions. The concept also encompasses a way for physicians to relate to relevant family members, and for family members to relate to patients. Thus, we suggest that practitioners' being autonomy-supportive with patients and relevant family members, and encouraging family members to be autonomy-supportive with the patients, is the central element in providing relationship-centered care.

The theory contrasts being autonomy-supportive with being *controlling*, which means to explicitly or implicitly pressure the patient to behave in specific ways—for example, to stop smoking or keep an appointment. Being controlling is closely related to being "physician-centered," an approach that, according to Phillips and Jones (1991), involves physicians' assuming that their authority alone is enough to motivate patients. The "controlling" concept can also be used to describe family members who are demanding, critical, and inflexible with patients.

Consider an example. When physicians are being autonomy-supportive in counseling patients about smoking cessation, they will elicit the patients opinions and feelings about smoking and health, and they will encourage the patients to decide whether or not to smoke. Of course, the physicians would convey their own belief that stopping smoking is important for the patients' long-term health, but rather than telling the patients that they should stop smoking now, which is the controlling approach, the autonomy-supportive physicians would respect the patients' right to make the choice (Williams, Quill, Deci, & Ryan, 1991).

Another central distinction within self-determination theory is the concept of being *autonomous* versus *controlled*, a distinction that applies to the patients' motivation rather than to a physician's or family member's style. When patients are autonomous they feel volitional and willing to engage in a health-relevant behavior because they have fully accepted its importance. In contrast, when they are controlled they behave because they feel pressured by some interpersonal or intrapsychic force. Within the theory, providers or family members being autonomy-supportive for patients is predicted to lead the patients to become more autonomously motivated to behave in healthier ways.

One can readily see in the description of autonomy support that it is very similar to the behaviors prescribed within relationship-centered care and that patients' being more autonomous is an ideal of that approach. We believe there are three advantages to using the concepts from self-determination theory to investigate the effects of relationship-centered care on patients' outcomes. First, the theory's paradigms and psychometric instruments have been well validated (Deci, Schwartz, Sheinman, & Ryan, 1981; Grolnick, Ryan, & Deci, 1991; Ryan & Connell, 1989) and are easily adapted to patient-physician interactions, so using the concepts that are tied to valid instruments could help to bring an integration to research in this field. Second, dozens of studies in laboratory and field settings have confirmed a link between authority figures being autonomy-supportive and individuals being autonomously-motivated (Deci & Ryan, 1985) and in turn more persistent, more creative, better able to think conceptually, more trusting and satisfied, and more psychologically healthy (Deci, Connell, & Ryan, 1989; Kasser & Ryan, 1993; Koestner, Ryan, Bernieri, & Holt, 1984). For example, studies in educational settings have shown that when teachers were more autonomy-supportive their students became significantly more autonomous, and when the students were more autonomous they showed greater conceptual understanding and better adjustment (Deci et al., 1981; Grolnick & Ryan, 1987). It thus seems logical to hypothesize that physicians being more autonomy-supportive would lead to patients being more autonomously motivated, more active in their own care, and healthier. And third, the theory is broad in scope, so it allows us to draw together diverse phenomena with precise theoretical principles and in turn to formulate practical applications for diverse healthcare settings.

Physician Style and Patient Motivation

Several studies have used the Treatment Self-Regulation Questionnaire (TSRQ), derived from self-determination theory, to assess whether patients' motivation for participating in health-relevant treatments or engaging in healthy behaviors is more autonomous versus more controlled. The questionnaire asks patients why they would do target behaviors (e.g., take their medications as prescribed, try to stop smoking, etc.) and then gives reasons that vary in the degree to which they represent autonomy versus control. Examples of controlling reasons are, "I would feel guilty if I didn't do what my doctor said," and "My family would be upset with me if I did not," whereas examples of autonomous reasons are, "I personally believe that doing so is important for remaining healthy," and "I find it personally challenging to do so." Patients rate the extent to which each reason is true for them, and their responses are combined into overall scores.

In the first study to use the TSRQ, Ryan, Plant, and O'Malley (1995) studied outpatients in an alcohol-treatment

program and found that patients who were more autonomously motivated attended the sessions more regularly, stayed in the program longer, and were rated by clinicians as being more actively involved, relative to patients whose motivation was more controlled. Patients who were more autonomous seemed to place greater value on the treatment.

Williams, Rodin, Ryan, Grolnick, and Deci (1998) studied patients' adherence to long-term medication regimens, using two pill counts and patient self-reports of adherence. Analyses revealed that patients' autonomous motivation, assessed with the TSRQ, was a strong positive predictor of adherence. Patients also reported their perceptions of the extent to which their physicians were autonomy-supportive, using an instrument called the Health-Care Climate Questionnaire (HCCQ). The HCCQ includes items related to the provider's listening to the patient's viewpoint, fully answering the patient's questions, providing choice, encouraging open discussion, and supporting participation in decision making. Analyses indicated that patients who perceived their primary care physician as more autonomy-supportive reported more autonomous reasons for adhering to their prescriptions and displayed better adherence, relative to patients who perceived their doctor as more controlling.

In another study (Williams, Grow, Freedman, Ryan, & Deci, 1996), severely obese patients participated in a 6-month, medically supervised, very-low-calorie, weight-loss program. Patients visited the clinic weekly to meet with the program staff—including the doctor, nurses, nutritionists, exercise physiologists, and psychologists. Patients completed both the TSRQ to assess their autonomous motivation and the HCCQ to assess their perceptions of the autonomy-supportiveness of the program staff. Results revealed that patients who perceived the staff as more autonomy-supportive were more autonomous in their program participation, and in turn, attended more regularly, lost more weight, and, most importantly, maintained more of their weight loss and exercised more regularly at a 23-month follow-up.

Williams, Freedman, and Deci (1998) studied patients with diabetes who completed both the HCCQ and the TSRQ, and whose HbA1c values were obtained from blood samples. Analyses of the data revealed that patients' perceptions of the staff's autonomy support predicted their autonomous motivation for following the treatment regimen, which in turn predicted better glucose control.

A complementary finding resulted from reanalysis of 25 interactions between doctors and patients with diabetes originally studied by Kaplan, Greenfield, and Ware (1989). Those researchers had "activated" patients by having a research assistant meet with the patients before their scheduled physician visit to encourage them to be more initiating and interactive during the visit. In the reanalysis, Williams and Deci (1996a) had the interactions rated for doctor autonomy support and patient active involvement, and they found that activated patients with diabetes were more involved during the visit and had lower HbA1c scores. Further, there was a strong positive relation between physicians' autonomy support and patients' active involvement, and a moderately strong negative relation between patients' involvement and HbA1c. Thus, patients being active and autonomous may be the central process through which activation had its effects in the Kaplan et al. studies.

Finally, in a study of smoking cessation (Williams & Deci, 1996b), primary care physicians used the National Cancer Institute guidelines (Glynn, Manley, & Pechacek, 1990) to counsel patients who completed the HCCQ and TSRQ. Results indicated that 6-month cessation, assessed

with self-reports and carbon monoxide validation, was significantly predicted by patients' autonomous motivation, and that autonomous motivation was significantly predicted by the perceived autonomy support of the physicians.

In this smoking-cessation study, the patient-physician interactions were tape recorded, and observers rated the physicians' autonomy support. These independent ratings of autonomy support were significantly related to patients' autonomous motivation assessed with the TSRQ, just as the patients' *perceptions* of physician autonomy support had been related to the patients' autonomous motivation. This finding is particularly important because it indicates that the frequently-replicated relation between patients' perceptions of the autonomy support of the physician and patients' autonomous motivation is not merely a function of the autonomous patients perceiving their doctors to be more autonomy-supportive.

Of course, it is possible that when patients are more autonomous, physicians actually behave toward them in a more autonomy-supportive way, thus suggesting that the causal direction goes from patient to physician. However, Williams and Deci (2000) had each doctor use the NCI guidelines in an autonomy-supportive way with some patient smokers and in a controlling way with others (randomly assigned). Results showed that in the condition where doctors supported autonomy, observers rated them as significantly more autonomy-supportive than in the condition where doctors were controlling. In turn, these ratings were significantly predictive of the patients being more actively motivated and having better cessation rates at 6-, 12-, and 30-month assessments, thus confirming that physicians' behavior does influence patients' motivation and behavior.

Although the relation between physicians' interpersonal style and patients' motivation is surely bi-directional, these findings emphasize, consistent with the relationship-centered approach, that if physicians take the lead and are autonomy-supportive with all their patients, the patients are likely to respond by becoming more actively involved and autonomously motivated.

To summarize, several studies support the hypothesis that when primary care physicians are more autonomy-supportive (i.e., relationship-centered) their patients will be more autonomously motivated, which in turn leads to program attendance, smoking cessation, glucose control, long-term exercise, maintained weight loss, and adherence to medication prescriptions. Further, supporting patients' autonomy was also found to make the interview more time efficient (Frankel, Morse, Suchman, and Beckman, 1991).

Patient-Physician Interactions

Other studies have adapted qualitative methods developed by Sacks, Schegloff, and Jefferson (1974) to explore patient-physician exchanges during typical primary care office visits. Using audio- or videotaped medical encounters, the studies have enriched the concept of autonomy support by analyzing concrete behaviors and experiences of physicians and patients.

Beckman and Frankel (1984) studied the opening moments of patient-internist encounters in which the doctor typically elicits the reason(s) for the patient's visit. They found that only 23% of the patients were allowed to complete their opening statement before the physician interrupted and controlled the encounter by asking questions of the patient. The average time to interruption was 18 seconds. A follow-up study by Marvel, Epstein, Flowers, and Beckman (1999) revealed that the average time to interruption for family practitioners was 22 seconds.

There has been much discussion about patients' tendency to withhold important concerns until the last minutes of the clinical encounter. The Beckman and Frankel study

suggests that patients withholding may result from doctors being controlling early in the encounter rather than supporting the patients' autonomy. In fact, a follow-up study (Beckman, Frankel, & Darnley, 1985) directly linked the specific event of physicians interrupting patients early in the encounter to the patients withholding important information.

A study by Epstein, Morse, Frankel, Frarey, Anderson, and Beckman (1998) using fine-scale interaction analysis of physician-patient discussions of HIV risk indicated that the most successful discussions were well timed (e.g., did not occur in the transition to the genital-urinary exam), unambiguous, and specifically evaluated high-risk sexual practices. Among the behaviors that impeded successful discussions were controlling statements by the physician and failure to clarify ambiguous or vague statements. Although awkward moments occurred in both successful and unsuccessful HIV risk discussion, an autonomy-supportive or relationship-centered approach, which involves taking the patients' perspective, allowed interactions that were more productive and dealt effectively with those awkward moments.

A recent study employing both quantitative and qualitative analyses of tape-recorded interactions between patients and both primary care physicians and surgeons revealed that primary care physicians tended to be more autonomy-supportive than surgeons in the sense that they facilitated more discussion about psychosocial factors and elicited more participation from patients (Roter, Levinson, Mullooly & Frankel, 1997). Other results indicated that patients' perceptions of the willingness of both types of doctors to listen was positively related to the patients' satisfaction with their clinical visits (Eckstrom, Levinson, Mullooly, Frankel, & Roter, 1996). This implies that it may be useful for a wide range of doctors to be autonomy-supportive and relationship-centered in order to enhance patient satisfaction, although that may not be appropriate in some acute care situations.

Finally, the general practitioners and surgeons in this sample were divided into physicians who had been sued for malpractice at least twice and those who had not been sued at all (Levinson, Roter, Mullooly, Dull, & Frankel, 1997). Analyses revealed that primary care physicians who had been sued at least twice behaved in a less relationship-centered fashion than primary care physicians who had not been sued at all, although this effect did not emerge for the surgeons. Thus, it is becoming clear that primary care physicians' being autonomy-supportive or relationship-centered consistently yields positive healthcare outcomes, but future research will be needed to determine which of the positive outcomes will accrue when physicians in other specialties and subspecialties are relationship-centered.

Patient-Family-Physician Interactions

The relationship-centered approach asserts that the quality of interactions between patients and their families, as well as the quality of interactions between patients and their providers, influence healthcare outcomes (Campbell, 1986; Doherty & Campbell, 1988; McDaniel, Campbell, & Seaburn, 1990). Thus, there may be times when it is appropriate for primary care physicians or other providers to intervene in clinically relevant family dynamics in order to promote patients' health and well-being (Campbell & Patterson, 1995). From the perspective of self-determination theory, this would involve the providers not only being autonomy-supportive in their interactions with both patients and their family members, but also encouraging the family members to be more autonomy-supportive with the patients.

Numerous studies have reported a relation between patients experiencing social support from their families and having less

overall morbidity and mortality (Cohen & Syme, 1985; House, Landis, & Umberson, 1988); however, some investigators have argued that social support will be most effective when patients experience it as autonomy support—namely, when they experience the others as understanding their perspective, listening fully, and providing choice (Ryan & Solky, 1996). Although family members having contact with and doing things for patients is in a sense support, we argued that if those interactions are controlling or intrusive rather than supportive and positive they may have negative rather than positive effects.

Similarly, Coyne, Wortman, and Lehman (1988) suggested that social interactions between patients and family members which are stressful or negative (rather than supportive or positive) may have detrimental effects on patients' health. In fact, studies have shown that negative expressed emotion in families (Brown, Birley, & Wing, 1972) was related to poorer outcomes for obese patients (Fischmann-Havstad & Marston, 1984), patients with diabetes (Koenigsberg et al., 1993), depressives (Hooley, 1986), and schizophrenics (Leff & Vaughn, 1985).

Shields and colleagues (Shields, Franks, et al., 1992) developed a short self-report measure to assess patients' perceptions of negative expressed emotion within their families, including a family criticism subscale. The measure has been shown to have good reliability as well as construct and criterion validity (Shields, Franks, et al., 1994).

Using this measure, Franks and colleagues (Franks, Shields et al., 1992; Franks, Campbell, & Shields, 1992) found that higher levels of perceived family criticism were predictive of more depressive symptoms, and that more depressive symptoms were related to more cardiovascular risk behaviors such as poor diet, lack of exercise, and smoking. A more recent study (Fiscella, Franks, & Shields, 1996) revealed that, after adjusting for demographics, higher levels of perceived family criticism predicted more primary care visits.

Together, the results suggest that negative expressed emotion in the family has deleterious effects on mental health, risk behaviors, and the number of visits to primary care physicians. Recognizing the increased risks that flow from this type of family dynamic can provide a window of opportunity for the practicing clinician to assess and intervene so as to modify or ameliorate potentially detrimental patient-family interaction patterns.

An interview study (Morse, Suchman, & Frankel, 1997) found that highly negative family interactions experienced by girls (viz. childhood abuse) was related to somatization when they had become adults and to a high rate of healthcare utilization, including unnecessary and invasive procedures. The study also indicated that the women who were able to discuss the abuse with their doctor decreased their utilization. Thus, this preliminary study suggests that extremely negative family interactions can have effects on patients' health and healthcare-utilization that persist for decades, and also that doctors' autonomy-supportive attention can lead to positive outcomes even in these difficult cases.

Family members being controlling with patients is, of course, only one form of negative interactions and is not identical to negative expressed emotions. None-theless, negative expressed emotions, and especially family criticism, is an aspect of family interactions that is antithetical to autonomy support. Thus, one can infer that family situations characterized by the expression of criticism and negative emotions will be low in autonomy support. Still, additional research is necessary to clarify the precise relation between autonomy support and expressed negative emotions within families.

Conclusions and Future Research

Research in the Rochester Biopsychosocial Program using varied paradigms has shown remarkable convergence in support of the proposition, contained within the Biopsychosocial Model (Engel, 1977), that the quality of patient-physician and patient-family relationships have important consequences for health outcomes.

Specifically, when primary care physicians were more autonomy-supportive or relationship-centered, patients showed improved maintenance of healthy behavior change, greater satisfaction, better adherence to medication, better physical and mental health, fewer healthcare visits, and less likelihood of initiating legal action against their physicians. Further, when family members were less negative and critical in their interactions with the patients, positive health-relevant consequences also resulted, thus suggesting that primary care physicians may need to pay more attention to and be more prepared to intervene in family dynamics if they are to promote patient health.

In this article we have used self-determination theory as a basis for beginning to integrate the disparate though complementary research from the various disciplines concerned with relationship-centered care. Much research remains to be done to verify the relevance of the concept of autonomy support to positive healthcare outcomes. First, much of the work that directly tested self-determination theory in medical settings has used patients' perceptions of providers' autonomy support. Only recently have we begun to examine the effects of the experimental manipulation of doctors behaving in autonomy-supportive versus controlling ways (Williams & Deci, 2000), and more of that research is needed, as is research on the development and testing of autonomy-supportive counseling interventions that can be used by physicians and other providers for promoting healthy behaviors such as smoking cessation and diet improvement. Furthermore, much research is needed to examine the specific constructs of autonomy support and autonomous motivation in family dynamics. For example, it would be important to assess patients' perceptions of the autonomy-supportiveness of family members in order to link that to patient health outcomes. Research on the relation between family members' perceptions of the degree to which the patients' physicians are autonomy-supportive toward the family and the degree to which family members in turn are autonomy-supportive toward patients would also be highly informative.

Taken together, the studies reviewed in this article suggest that relationship-centered care is an effective, efficient, and satisfying alternative to the traditional physician-centered approach that focuses narrowly on biomedical aspects of illness and health. Fortunately, there is evidence that the skills required for relationship-centered care can be taught, learned, and put into practice by physicians in training (Beckman, Frankel, Kihm, Kulesza, & Geheb, 1990; Maguire, Fairbairn, & Fletcher, 1987; Williams & Deci, 1996a). For example, in a study by Williams and Deci (1996a), second-year medical students in an interviewing course rated the autonomy-supportiveness of their instructors, and results indicated first that medical students who experienced their instructors as more autonomy-supportive became more autonomously motivated to learn about physician-patient interactions and the psychosocial aspects of medicine. Subsequently, these students who became more autonomously motivated were rated as more autonomy-supportive in their interview of simulated patients regarding change in their health behavior five months after the interviewing course had ended. It thus seems essential that medical educators begin to pay greater attention to the interpersonal aspects of physician training as one important means of improving the health outcomes of patients (Williams & Deci, 1998).

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