PREDICTORS OF ATTRITION FROM BEHAVIORAL MEDICINE TREATMENTS[1]

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ABSTRACT

Despite the efficacy of a range of behavioral medicine interventions, high rates of attrition are a persistent problem in both clinical and research settings. Appropriately, studies have begun to focus on predictors of attrition with the hope of identifying important client or treatment characteristics. This article reviews attrition predictors in outpatient behavioral medicine treatments for headache, pain, stress, and weight management. Across all areas, psychological variables and severity of symptom variables were more predictive than demographic variables. However, as 13 of the 20 studies reviewed were in the area of weight management, generalizability of the findings to other treatment areas requires further investigation. Recommendations are made for improving attrition research by (a) developing clinically valid definitions of attrition, (b) recognizing important within-group differences among those who prematurely terminate treatment, and (c) focusing on theoretically grounded psychological and treatment process variables. A working definition of attrition based on the integration of clients' and clinicians' perspectives is also provided.

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INTRODUCTION

Behavioral medicine interventions have been increasingly recognized as important components of treatment for chronic conditions such as benign headaches (1), gastrointestinal disorders (2), and asthma (3). They are less expensive to implement and lack side effects associated with medical interventions for chronic insomnia (4,5), headaches (6), and pain (7). For example, biofeedback and relaxation therapy have been used to treat various health problems, and evaluation of the efficacy of such therapies suggest positive outcomes when used in the treatment of chronic pain (8).

Despite the benefits associated with self-management behavioral medicine treatments, many clients terminate treatment prematurely (9). Behavioral medicine investigators have reported attrition rates of 66% for weight control (10), 38% for chronic headache clients (11), and between 4% and 70% for pain management programs (12). In fact, premature termination has been identified as particularly problematic among clients diagnosed with chronic conditions (13,14) and among those for whom life-style changes are crucial treatment goals (15,16). As both life-style changes (17,18) and self-management treatment of chronic conditions are hallmarks of behavioral medicine programs (2,3), attrition is likely to remain a significant challenge unless predictors of attrition are identified and appropriate interventions developed.

The importance of identifying variables associated with attrition is illustrated by the litany of negative consequences correlated with dropout from traditional psychotherapy treatments. Clients who complete treatment generally report greater symptom reduction and posttreatment use of strategies compared to dropouts (19). Early psychotherapy dropouts (one to two visits) have been found to report more severe symptoms compared with completors after treatment termination (20). In addition, attrition is associated with reduced treatment efficacy and cost-effectiveness (21) and creates clinical, financial, and morale problems for mental health practitioners (22). Responding to the need for decreased premature termination rates in clinical and research settings, studies have begun to investigate predictors of attrition.

Previous reviews selected studies specific to a single chronic condition such as pain (12) and did not include attrition studies based on other health conditions. In contrast, the present review examines published studies investigating predictors of attrition in headache management, stress management, pain management, and weight control outpatient behavioral medicine programs. A majority of studies reviewed were in the area of weight management, which illustrates the dearth of attrition research in other treatment areas. It could be argued that reviewing predictors of attrition is premature because the area of research is relatively young. Our assumption is that it is extremely important to review existing studies to identify methodological trends, weaknesses, and substantive findings. By evaluating this area of research relatively early in its development, we hope to prevent repetition of problematic research designs and consequent ambiguous findings. We summarize and interpret the findings of 20 attrition studies and discuss their clinical and research implications.

SCOPE OF THE REVIEW

The sample of studies was identified using the following three methods: (a) computer search of PsychLit from 1979 through 1997 using the key terms attrition, dropout, premature termination, headache, pain, stress, insomnia, irritable bowel syndrome, weight reduction, and weight loss. Multiple searches were conducted for all terms by using each of three attrition terms (i.e. attrition, dropout, and premature termination) coupled with a chronic condition (e.g. headache); (b) a computer search of MEDLINE from 1979 through 1997 was also conducted using the same strategy; (c) reference sections of attrition studies were examined for possible studies not identified previously.

Studies were included in the review if: (a) they were published in English; (b) they investigated predictors of attrition from outpatient behavioral medicine programs; (c) subjects were patients who received treatment for a chronic condition; (d) they were conducted at outpatient settings with adult clients; and (e) behavioral medicine treatments were used to treat a chronic health problem (i.e. headaches, insomnia, irritable bowel syndrome, obesity, pain, and stress). Studies conducted using behavioral

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medicine treatment combined with other treatments, such as substance abuse treatment, were excluded. Thus, this paper reviews studies which examined variables predictive of attrition specifically from outpatient behavioral medicine programs.

Twenty studies were identified and comprised four treatment areas within behavioral medicine. Specifically, headache management (3 studies), pain management (3 studies), stress management (1 study), and weight control (13 studies). Although we aimed to review insomnia and irritable bowel syndrome attrition studies, none were located. All studies investigated predictors of attrition from short-term (8 to 26 weeks) programs, and treatment strategies included relaxation, biofeedback, cognitive–behavioral therapy, behavior modification, meditation, monetary incentive strategies, yoga, and low-calorie diets. As the findings of studies which investigate predictors of attrition could be used to develop preventive interventions, it is important to consider the generalizability of findings to clinical populations. In the present review, some studies used relatively unselected medical patients, while others excluded patients using various screening procedures. The subject samples recruited by the studies reviewed will be described in the literature review.

Rate of Attrition

Based on Table 1, the rate of attrition across the 20 studies ranged from 10% to 59%. These rates resemble those of psychotherapy attrition studies where between 30% and 60% of outpatients terminate prematurely (21,41). According to the studies reviewed, approximately one-third of behavioral medicine clients stop attending prior to a duration suggested by a clinician. Specifically, the mean attrition rate for the chronic headache and chronic pain studies was 35%; a rate of 24% was reported by the stress management attrition study (28); and the mean attrition rate for the weight control studies was 32%.[2]

Of the 20 studies reviewed, 5 used subcategories to define their attrition samples (25,28,29,38,40). Attrition categories were labeled no-show, early, and late dropouts. The study by Kabat-Zinn and Chapman-Waldrop (28) examined the categories of no-show to the first session versus termination after attending at least the first session. The remaining 4 studies compared early versus late dropouts (25,29,38,40). Three of these studies reported higher early than late premature termination rates (25,29,40). Thus, it appears that clients are more likely to terminate treatment early than later. By using attrition categories based on phase of treatment, the researchers were able to investigate if predictors of attrition differ according to time of dropout. We later discuss the significance of investigating when and why clients stop attending treatment.

Methods of Defining Attrition

Table 1 illustrates that studies vary in how clearly they operationalize attrition. For instance, while some do not report the criteria they used (18,26,33), others outline the method used to subdivide a sample into early versus late dropouts (25,29,38,40). According to Table 1, although 15 studies used an attrition definition which involved number of sessions attended, only 4 studies specified the exact number of sessions used to define attrition (25,29,38,39). It is conceivable that one study could have a sample where most people terminated treatment following the first two sessions, while in another study, clients could have terminated at a later treatment phase. If attrition samples were described, such information could illustrate whether the findings of a study are relevant to a particular subgroup of clients, (e.g. early versus late premature terminators of treatment). A second definition used by studies was clients' reports that they were terminating treatment (34,36,39).

Our review of 20 studies concludes that definitions vary both within a specific area (e.g. chronic headache studies) and across studies of different health problems, (e.g. chronic headache versus chronic pain attrition studies). Table 1 illustrates that while two chronic headache attrition studies used number of treatment sessions attended to define dropout (24,25), the third study also included failure to attend a pretreatment evaluation (23). In the case of the three pain management attrition studies, one study did not report a definition of attrition (26), one used client attendance (27), and one utilized client report of treatment termination (14). Thus, definitions of attrition vary widely both within (e.g. chronic headache studies) and between (e.g. chronic pain, chronic headache, and weight management studies) treatment areas of behavioral medicine.

Predictors of Attrition

We begin our discussion of predictors of attrition by describing the types of variables assessed across the four behavioral medicine treatment areas included in the review. We then review findings for specific variables within each treatment area. As each study investigated multiple predictor variables (see Table 1), we chose to summarize findings by assigning each variable to one of seven categories we selected. We selected this box score method as opposed to a meta-analytic strategy for two reasons. First, the limited number of studies would have made generalizations from meta-analytic results extremely tentative at best. Second, the variability in definitions of attrition across studies, as well as the different populations studied, made subsample comparisons impossible given the number of studies available. Indeed, our hope was that by summarizing the current state of attrition research in behavioral medicine, we could pave the way for improvements in research design, allowing for future meta-analytic reviews.

We summarized each variable listed in Table 1 according to one of the following categories: behavioral, demographic, psychological, social, symptom severity, therapist, or medical variables. Variables which required clients' ratings of behavioral patterns were labeled behavioral (e.g. eating patterns, frequency of weight loss attempts). Variables such as age, socioeconomic status, sex, and occupation were labeled demographic variables. The psychological category involved variables such as beliefs, coping styles, and self-efficacy. Variables were categorized as social when the focus was on interactions or relationships with others, while the symptom severity category involved variables where client ratings of the severity of symptoms such as pain, depression, and anxiety were required. The therapist category was composed of variables which examined client–therapist compatibility and comparisons of attrition rates across different therapists. Finally, the medical category was composed of variables which involved blood pressure levels, electroencephalogram (EEG) readings, and body mass index.

[2] Of course, rates do not inform us about when and why attrition occurred, or the consequence of attrition for clients. Attrition studies should also investigate whether variability exists among clients in terms of the treatment required to enable sufficient self-management of symptoms. This would permit classification of clients as treatment successes or early completors as well as more accurately identifying premature terminators of treatment. Unfortunately, virtually no existing studies make this distinction, a point we return to in our discussion.

TABLE 1

Summary of Studies Investigating Predictors of Attrition from Behavioral Medicine Programs

Study	Attrition Rate	*N*	Age Mean	Definition of Attrition	Type of Treatment	Length of Treatment	Predictors of Attrition	Relationship to Attrition[3]
Chronic Headache Treatment Programs								
Evans and Blanchard (23)	23%	314	37.5	Failure to complete all portions of pretreatment, assessment, and treatment phase	Relaxation biofeedback (3 to 16 sessions)	8–12 wks	headache severity	−
							age	−
							assertiveness	+
							SES	−
							sex	0
							marital status	0
							education	0
							income	0
							depression	0
							anxiety	0
							headache history	0
							MMPI subscales	0
Hart (24)	37%	90	37.5	Number of sessions attended	Progressive muscle relax biofeedback (12 weekly sessions)	12 wks	race	+
							education	0
							age	0
							sex	0
							inpatient referrral	+
							locus of control	0
							headache severity	−
							depression	+
							assertiveness	0
							anxiety	0
							personality	0
Tsushima, Stoddard, Tsushima, and Daly (25)								
nontrauma headaches	41%	165	39.0	Attended less than 5 sessions	Relaxation biofeedback (weekly 60-minute sessions)	8 wks	paranoia MMPI scale	+
							mania MMPI scale	+
							psychopathic–deviate MMPI scale	+
							age	0
							SES	0
							headache duration	0
							EMG readings	0
trauma headaches	39%	271	39.8	Number of sessions attend	Relaxation biofeedback (weekly 60-minute sessions)	15 wks	MMPI scales	0
							age	0
							SES	0
							duration of headache	0
							EMG readings	0
Dropout Categories							Early vs late dropouts vs completors	
early dropouts	20%	55		Attended less than 5 sessions			MMPI scales	0
later dropouts	19%	52		Attended 5–9 sessions			age	0
							SES	0
							duration of headaches	0
							EMG readings	0
Chronic Pain Treatment Programs								
Chronic Musculoskeletal Pain								
Flor and Birbaumer (26)	30%	120	42.4	Not reported by authors	Biofeedback cognitive–behavioral medical intervention (eight 60-minute sessions)	8 wks	age	0
							organic diagnosis	−
							no. of dropouts for a particular therapist	+
							pain duration	0
							pain severity	0
							depression	0
							EMG readings	0

TABLE 1
Continued

Study	Attrition Rate	N	Age Mean	Definition of Attrition	Type of Treatment	Length of Treatment	Predictors of Attrition	Relationship to Attrition[3]
Chronic Temporomandibular Pain								
Funch and Gale (27)	46%	78	39.8	Cease to attend recommended weekly sessions	Muscle relax biofeedback (weekly sessions)	15 wks (average)	pain severity	0
							depression	0
							demographics	0
							locus of control	0
							motivation	0
							anxiety	0
							duration of disorder	0
							positive feedback from others regarding client's pain	+
Chronic Occupational Pain of Upper Limbs								
Spence and Sharpe (14)								
clinic-based treatment	29%	14	38.8	Number of sessions	Cognitive–behavioral relaxation (eight 60-minute sessions)	8 wks	none studied	
home-based treatment	60%	20	39.7	Client report	Cognitive–behavioral relaxation 8-session manual weekly 5-minute telephone contact (read 1 session weekly; content identical to clinic sessions)	8 wks	credibility of program	−
							pain beliefs	0
							pain index	0
							sickness impact	0
							coping strategies	0
							depression	0
							anxiety	0
							interference	0
Stress Management Treatment Programs								
Kabat-Zinn and Chapman-Waldrop (28)	24%	784	41.4	Did not attend first session or dropped out after beginning program	Mindfulness meditation hatha Yoga Body Scan (eight 2-hour weekly sessions)	8 wks	general severity index	−
							obsessive–compulsive	−
							diagnosis	0
							sex	0
							medical symptoms	0
Dropout Categories							No Show vs Dropout	
session 1—no show	8.7%						no significant differences	
dropouts	15.1%							
Weight Reduction Treatment Programs								
Bennett and Jones (29)								
Study 1	30%	105	40.2	Dropped out after session 3 Did not attend session 3	Behavioral treatment (self-instructional training)	16 wks	social class	−
							anticipated weight loss	+
							verbal skills	−
							self-evaluation	−
							interference	+
							age	0
							occupation	0
							marital status	0
							locus of control	0
							personality	0
							treatment expect	0
Dropout Categories							Early vs Late Dropouts	
early dropouts	16%			Did not attend session 3			early had significantly higher externality and lower self-evaluation accuracy scores than late dropouts	
late dropouts	13.3%			Dropped out after session 3				

TABLE 1
Continued

Study	Attrition Rate	N	Age Mean	Definition of Attrition	Type of Treatment	Length of Treatment	Predictors of Attrition	Relationship to Attrition[3]
Bennett and Jones (29) Study 2	23%	62	39.4	Did not attend session 4 Dropped out after session 4	Behavioral treatment (cognitive rehearsal)	16 wks	expected weight loss	+
							no. of weight loss attempts	0
							interference	+
							social class	0
							verbal skills	0
							self-evaluation	0
							age	0
							occupation	0
							marital status	0
							locus of control	0
							personality	0
							treatment expect	0
Dropout Categories							Early vs Late Drop	
early dropouts	14.5%			Did not attend session 4			early had made significantly fewer attempts to lose weight than late	
late dropouts	8.0%			Dropped out after 4th session				
							Descriptive Statistics	
Bernier and Avard (30)	16%	62	43.5	Missed 2 or more sessions	Cognitive–behavioral self-control (10 weekly sessions)	10 wks	amt of weight loss	0
							weight loss goal	0
							efficacy expectations	−
							goal confidence	−
							eating patterns	0
Brownell, Heckerman, and Westlake (31)	52%	147	44.8	Completed treatment but not 6-month follow-up	Behavioral (ten 1.5-hour weekly sessions)	10 wks	amt of weight loss	−
							depression	0
							anxiety	0
							alcohol intake	0
							eating patterns	0
							juvenile obesity	0
Clark, Niaura, King, and Pera (32)	Not reported	143	42	No. of sessions attended	Behavior therapy and VLCD (26-week clinical multidisciplinary VLCD and behavior therapy program)	26 wks	depression	+
							smoke cigarettes	+
							exercise	−
							blood pressure	+
							age	−
							body mass index	−
Collins, McCabe, Jupp, and Sutton (33)	23.5%	68	40.8	Not reported	Weight reduction counseling (10 counseling sessions)	15 wks	age	−
							occupational status	0
							error in perception of obesity level	+
Ho, Nichaman, Taylor, Lee, and Foreyt (34)	18.6%	156	40.5	Refusal to attend treatment	Behavioral self-management or food dependency intervention	6 months	nonbinge eater	+
							body mass index	0
							race	0
							age	0
							no. of prev attempt	0
							clinician	0
Kolotkin and Moore (18)	59%	271	37.7	Not reported by authors	Behavior modification (12 weekly sessions)	12 wks	initial weight	0
							age	0
							% overweight	0
							eating patterns	0
							no prior attempts	0
							education	0
							employed out of home	+
Mavis and Stoffelmayr (35)	10% grp 1 19% grp 2 55% grp 3 10% grp 4 25% grp 5	20 21 20 20 20	41.7	Client report or a no show at the final program meeting	Behavioral strategies with monetary incentives (six weekly 1-hour sessions and four biweekly 1-hour sessions)	14 wks	monetary response cost group had significantly higher attrition rate than any other group	

TABLE 1
Continued

Study	Attrition Rate	N	Age Mean	Definition of Attrition	Type of Treatment	Length of Treatment	Predictors of Attrition	Relationship to Attrition[3]
Mitchell and Stuart (36)	24%	414	37.8	Client reported decision to leave program	Weight Watchers	12 wks	efficacy levels	−
							age	−
							perceived success	−
							frequency of attempts	+
							education	0
							income	0
							living status	0
Pekarik (37)	28%	74	40.5	No. of sessions attended	behavioral self-control (eight weekly 45-minute sessions)	8 wks	duration of program	+
	53%	52		No. of sessions attended	behavioral self-control (twelve weekly 45-minute sessions)	12 wks	amt of weight loss	0
Pekarik, Blodgett, Evans, and Wierzbicki (38)	54%	52	43.8	No. of sessions attended	Behavioral self-control	12 wks	demographics	0
							therapist–client compatibility	0
Dropout Categories							Early Dropouts	
early dropouts	17.5%			Attended 1–3 sessions			reported less functional scores on personality and depression scales than late dropouts	
late dropouts	36.5%			Attended 4–7 sessions				
							Late Dropouts	
							reported significantly lower anxiety scores than early dropouts and completors	
Wadden, Foster, and Letizia (39)	39.6%	235	40.5	Failure to attend 4 consecutive sessions or formal withdrawal by patient	Behavioral weight reduction therapy VLCD (structured VLCD protocol and weekly 75–90 min behavioral therapy sessions)	26 wks	amt of weight loss	−
							episodic overeater	+
Yaas-Reed, Barry, and Dacey (40)	36%	180	39.5	Phase of program	behavior modification, VLCD, education, exercise training (weekly physician meetings and structured groups)	26 wks		
Dropout Categories							Early Dropouts	
early dropouts	25%			Fail to attend between weeks 2–14			past emotional disturbance	+
							no. close friends	+
							no. of persons expected to annoy re weight loss efforts	+
late dropouts	14%			Fail to attend between weeks 15–26			no. of previous diets	−
							Late Dropouts	
							past emotional or physical problems while dieting	+
							Dropouts vs Completors	
							no. of previous diets	−
							expectation of stress	−
							expect insurance cover	+

[3] − = Low levels of the variable are predictive of attrition, or for categorical variables such as Race, then the identified variable is predictive of attrition; + = High levels of the variable are predictive or attrition, or for categorical variables such as Race, then the identified variable is predictive of attrition; 0 = The variable is not predictive of attrition.

Of the 151 predictor variables examined by all the studies, 17 (11%) were behavioral variables, 46 (30%) were demographic, 38 (25%) were psychological, 34 (23%) were symptom severity variables, 9 (5%) were medical, 3 (2%) were social, 3 (2%) were

therapist variables, and 1 variable examined program duration. Across the 20 studies, 9 (53%) of the behavioral variables, 10 (22%) of the demographic variables, 19 (50%) of the psychological variables, and 12 (35%) of the symptom severity variables were significantly correlated with attrition. All 3 of the social variables studied were predictive of attrition, and program duration was positively correlated with attrition. Three out of the 9 medical variables studied were significantly predictive of attrition, whereas 1 of the 3 therapist variables studied was predictive.

Chronic Headache

Approximately half the clinical sample recruited by Evans and Blanchard (23) were referred by physicians and 50% were self-referred. Similarly, Hart's (24) sample were patients referred to a research program which offered treatment for chronic headache. In contrast, the Tsushima et al. (25) study retrospectively analyzed (using medical and psychology records) data from patients who had received biofeedback treatment for chronic headaches. No exclusionary criteria (with the exception of missing data [25]) are identified.

Across the three chronic headache studies listed in Table 1 (23,24,25), demographic variables were most frequently investigated ($n = 16$), followed by symptom severity ($n = 11$), psychological ($n = 10$), and medical ($n = 3$) variables. The combined results of the three studies illustrated that none of the medical variables, four (36%) symptom severity variables, three (19%) demographic variables, and four (40%) psychological variables studied were significantly predictive of attrition. Although demographic variables were most frequently investigated, symptom severity and psychological variables were better attrition predictors.

As illustrated by Table 1, Hart (24) reported that race, a referral from an inpatient setting, higher depression scores, and less severe headaches are predictive of attrition. Evans and Blanchard (23) found that clients who fail to complete treatment emanate from lower socioeconomic backgrounds, are younger, report less severe headaches, and score higher on assertiveness scales than completors. Tsushima et al. (25) used responses to the Minnesota Multiphasic Personality Inventory (MMPI) scales to predict dropout from nontrauma headache programs and found that clients who attended less than five sessions scored higher on the Paranoia; Mania; and Psychopathic–Deviate scales. Interestingly, when the same variables were investigated for groups of trauma headache clients, the findings were not significant. Taken together, such findings illustrate that headache sufferers are not a homogenous group, and predictors of attrition may differ according to the type of headaches experienced by clients. Nonetheless, two studies indicate that patients with less severe headaches are more likely to fail to complete treatment.

Chronic Pain

Three studies of variables predictive of attrition from chronic pain behavioral medicine programs were reviewed (14,26,27). In Flor and Birbaumer's (26) study, exclusionary criteria for the selection of patients were: (a) inflammatory cause of pain; (b) neurological complications; (c) duration of pain less than 4 months; (d) pregnancy; (e) coincidence of temporomandibular pain and back pain; and (f) major psychiatric illness. Similarly, Spence and Sharp (14) excluded patients if they had a history of psychiatric illness; alcohol or drug abuse; lacked basic English literacy skills; and had pain other than occupational pain of the upper limbs. In contrast, Funch and Gale (27) reported recruiting patients who volunteered to participate in their treatment program.

As illustrated by Table 1, the three studies examined 12 (52%) symptom severity, 2 (9%) demographic, 5 (22%) psychological, 1 (4%) social, 1 (4%) therapist, and 2 (9%) medical variables. One variable from each of the following categories—psychological, social, medical, and therapist—were identified as predictive of attrition. All demographic and symptom severity variables were not significantly associated with attrition.

More specifically, when Spence and Sharpe (14) compared dropouts and completors across pretreatment and demographic variables, only ratings of the credibility of the program prior to treatment were significantly lower among dropouts compared to completors. Funch and Gale (27) compared dropouts and completors across a variety of demographic and psychological variables and reported that only receiving positive feedback from others regarding pain was predictive of attrition. Flor and Birbaumer (26) found that clients who were not diagnosed with an identifiable organic condition or those assigned to a particular clinician were more likely to prematurely terminate treatment.

Clearly, each of the three chronic pain studies reviewed reported different predictors of attrition. However, both the definition of attrition and the type of pain experienced by subjects differed across the three studies. One study did not report a definition for dropouts (26), another used number of sessions attended (27), while a third used number of sessions attended as well as client report of treatment termination (14). Chronic muscloskeletal pain was experienced by one sample of subjects (26), while chronic temporomandibular pain was reported by the subjects of Funch and Gale's (27) study. Spence and Sharpe (14) investigated clients who experienced chronic occupational pain of upper limbs.

In sum, few variables were found to predict attrition across the chronic pain studies reviewed. This finding may be the result of a combination of factors. First, it is possible that predictors of attrition differ according to the chronic pain experienced by clients. Second, the use of different criteria for labeling subjects as dropouts may lower the likelihood of replication. Third, Table 1 illustrates that there is little overlap in the choice of variables selected by the chronic pain attrition studies.

Stress Management

One study of attrition from behavioral medicine stress management programs was identified by our review. This study used an unselected sample of medical patients routinely referred by physicians for stress reduction training (28). The authors investigated one psychological, one demographic, one medical, and two symptom severity variables. Results indicated that only low scores on the general severity index and the Obsessive–Compulsive scale of the SCL-90-R were predictive of attrition among stress management clients (28). Based on the findings of this study, it is possible that clients who experience high levels of distress may remain in a program in the hope of obtaining some relief from symptoms. In addition, if such clients also experience obsessive–compulsive traits, they may not view program dropout as an acceptable option.

Weight Reduction

A total of 13 weight reduction behavioral medicine attrition studies were reviewed. Seven of the studies specified criteria which they used to exclude subjects (18,29,30,33–35,39). Exclusionary criteria included diabetes, pregnancy (29); bypass surgery, taking medications that affect weight (30); having uncontrolled endocrine or metabolic dysfunctions (33); heart disease, taking antidepressant medication (34); failure to pay $20 fee for the

findings as well as to the development of attrition interventions. For instance, Kabat-Zinn and Chapman-Waldrop (28) posit that stringent selection for behavioral interventions may exclude patients who are in most need of intervention. Clearly, it is important to recruit subjects such that patients who seek behavioral medicine treatments are represented. Attrition predictors could differ for carefully selected research participants and the diverse patients who may be referred to behavioral medicine clinics (e.g. 28). When considering the sample and selection criteria employed, future attrition studies could comment on the populations which are most likely to be represented by their findings.

Defining Attrition

There are several problems with previous methods for defining attrition. First, although studies label their samples as dropouts or completors, the composition of such samples may vary widely across studies. By conceptualizing dropouts as a single category (e.g. 24,26), studies neglect to examine possible differences between early versus late dropouts. Of the 20 studies reviewed, only 4 categorized the dropout sample as early versus late program dropouts (25,29,38,40). However, the content of interventions can vary depending on the stage of treatment. For instance, Table 1 illustrates that treatment duration for the studies varied from 8 to 26 weeks. Conceivably, the treatment goals and content of treatment differed across such programs with regard to the introduction of specific interventions and treatment strategies. In many cognitive–behavioral protocols, early sessions are psychoeducational and dedicated to presenting the rationale behind treatment. Later sessions involve implementation and rehearsal of treatment strategies. Thus, clients who terminate treatment early may disagree with the treatment rationale, whereas late dropouts may have difficulty with specific techniques. Such individual differences are lost if treatment phase when attrition occurs is not well-defined or early and late attrition are combined to form a single sample.

An additional problem is the failure to distinguish dropouts from early completors. Clients may fail to complete a specific number of treatment sessions because they have not improved and are unsatisfied with treatment. They may also discontinue treatment because they have made significant changes and no longer feel treatment is necessary. Although there is research demonstrating that dropouts have worse outcomes than completors on average (20,43), this is not always the case. Collapsing attrition (treatment termination without improvement) and early completion (treatment termination with improvement) obscures possible mechanisms or predictors distinguishing these two populations from standard treatment completors. For instance, Pekarik (22) proposed that there is a conceptual difference between early dropouts and early completors. Pekarik suggested that early appropriate termination (or early completion) is associated with transient problems, low disturbance levels, and the client's preference for problem-oriented treatment, while early attrition is associated with more severe symptoms.

In our own research, we use a definition of attrition based on a combination of the client's and the clinician's judgment of improvement. We categorize our samples according to three categories labeled early dropouts, early/program completors, and late dropouts. Categorization is based on the treatment phase, number of sessions attended, and client and therapist judgment. For instance, those who terminate treatment following sessions 1–3 are considered early dropouts if the client and/or the therapist verify the client's lack of improvement. In contrast, a client could terminate treatment after any number of program sessions, and if both therapist and client confirm that termination is appropriate, then such a client is considered an early/program completor. Therapist and client input is obtained by asking: (a) if the client has acquired a sufficient number of strategies to permit more effective coping, (b) if behavioral medicine treatment was helpful, (c) if sufficient progress was made to warrant termination, and (d) the reason(s) for treatment termination. Admittedly, this method of defining attrition can be cumbersome and may result in socially desirable responses from some clients and clinicians. However, it provides a means of identifying sample subcategories and avoids confounding true attrition from early completion.

The Need for Theory-Driven Research

In a critical review of aptitude by treatment interaction research in psychotherapy, Beutler suggested that the majority of matching studies select variables that have, " . . . weak conceptual linkages to psychotherapy theories or are without the benefit of reliable and valid measurement models" (44, p. 226). The same situation clearly applies to attrition research in behavioral medicine. Only 4 of the 20 attrition studies reviewed (30,33,35,36) identified a theoretical rationale for the variables they chose to investigate. The majority of studies investigated demographic variables such as age, sex, and socioeconomic status without a clearly articulated and compelling theoretical rationale for their selection. Consequently, the field has few replicative findings and a weak theoretical base from which to predict attrition.

What are needed are theories which link specific client characteristics and treatment processes onto attrition. Such theories should specify the psychosocial processes operating in behavioral medicine interventions and how specific behavioral, psychological, or contextual factors may be linked to attrition. For example, in our own research we have begun to examine the role of self-efficacy and etiological beliefs in determining attrition from behavioral medicine programs. Most of these programs encourage clients to utilize active coping skills and to practice them on a weekly basis. Attrition can be linked to clients' level of self-efficacy in relation to acquisition and implementation of skills; clients with low levels of self-efficacy should be more likely to prematurely terminate treatment since continuation in programs requires clients to "buy into" the idea that they can actively learn and utilize helpful coping strategies. Similarly, clients who hold discrepant etiological and treatment beliefs should be more likely to prematurely terminate treatment. Some researchers have illustrated that chronic pain patients often vehemently reject the notion that psychological factors may contribute to their symptoms (45,46). Preliminary findings from our research suggest that treatment expectations are predictive of early dropouts, while treatment experiences predict late dropouts.

Examination of extra-therapy variables (e.g. support for treatment from friends, family, and employers) is one promising avenue which has not been sufficiently explored. Given that individual change occurs within a social context and requires the support of that context for maintenance, it may be fruitful to widen the focus and include client–treatment–environment interactions associated with attrition. A study of chronic pain patients found that patients who perceived family members as being irritated with them were more likely to remain in treatment (27). These and other researchers suggest that family and friends can create an environment which supports or fails to support a patient's response to treatment (27,47).

It is notable that only 1 of the 20 studies reviewed examined a treatment process variable (i.e. the therapist–client compatability)

(38). In contrast, psychotherapy attrition studies consistently underscore the importance of process variables. For instance, Ford (48) found that client perceptions of the therapeutic relationship are associated with completing a cognitive–behavioral treatment lasting eight sessions and with making changes in both self-perception and behavior. A key component in the formation of a therapeutic relationship is therapist/client agreement regarding the goals and tasks of therapy (49). Client–therapist dyads who have low levels of task agreement have higher rates of attrition than converse dyads (50). In addition, psychotherapy studies report a threefold increase in attrition rates when therapists fail to identify a client's conceptualization of his/her problem (51,52). By neglecting to examine treatment process variables, behavioral medicine attrition researchers are ignoring factors which could delineate the process by which attrition occurs and clarify why clients prematurely terminate treatment. Moreover, the same variables that operate in individual and group psychotherapy may well be operating in behavioral medicine interventions.

Finally, attrition prediction studies should be prospective in order to avoid post hoc interpretation of atheoretically-derived predictors. Researchers should specify in advance those variables anticipated to be associated with attrition. The variables need to be assessed with reliable and valid measures, and definitions of attrition should be operationalized prior to data collection. Adoption of these methodological requirements will greatly advance investigations of variables which predict attrition. Such studies are a crucial first step in developing and implementing preventive interventions.

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