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Perceived Fairness and Effectiveness of Leveraged Community Treatment Among Public Mental Health Consumers in Five U.S. Cities

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Policies to leverage adherence with community-based mental health treatment have become widespread; however, little research exists on the attitudes of persons with psychiatric disorders regarding such leverage. This study examines the appraisals of 1,011 persons with psychiatric disorders regarding the fairness and effectiveness of leverage. A majority of consumers perceives leverage to be both fair and effective; these perceptions are highly correlated. Multivariate models suggest that perceived coercion and insight into illness are associated with both outcomes while number of hospitalizations, years in treatment, and appointment reminders are associated with either outcome. However, consumers with a psychotic diagnosis and high barriers to care view leverage as unfair when controlling for effectiveness. Consumers who experience less coercion and have better insight believe that they benefit from formal and informal sanctions to adhere to treatment. However, perceived barriers to care impact the evaluation of the fairness of leverage.

Key words. *Legal leverage, mandated community treatment, fairness, effectiveness, coercion, insight, barriers to care.*

The use of legal and social welfare system leverage to improve adherence with community-based treatment for persons with severe mental illness has emerged as one of the most controversial issues in mental health policy (Monahan et al., 2001). Recent research in five U.S. cities documented widespread use of several legal and policy tools, derived from the judicial and social welfare systems, as forms of leverage to promote treatment adherence (Monahan et al., 2001; Monahan et al., 2005; Monahan, Swartz, & Bonnie, 2003). One such mechanism is representative payeeship for disability and other entitlement funds, whereby appointed money managers may make access to funds contingent on treatment adherence (Elbogen, Soriano, Van Dorn, Swartz, & Swanson, 2005; Elbogen, Swanson, & Swartz, 2003a, 2003b). Another tool is the use of subsidized housing as leverage to secure adherence with treatment (Allen, 2003). Within the criminal justice system, a judge may offer a lenient sentence on the condition that a mentally ill defendant participate in treatment, or may make receipt of mental health services a condition of probation (Skeem & Petrila, 2004; Skeem, Encandela, & Eno-Louden, 2003). Also, specialty "mental health courts" have recently been developed, which explicitly link criminal sanctioning and community-based treatment (Griffin, Steadman, & Petrila, 2002; Redlich, Steadman, Monahan, Petrila, & Griffin, in press).

Proponents of these kinds of practices and related informal pressures argue that this approach can improve treatment adherence and engagement among persons with severe mental illness who have difficulty complying voluntarily with recommended treatment; that leverage promotes consumers' personal autonomy in the long run by reducing the risk of illness relapse and thus averting hospitalization or incarceration. To some consumers and other stakeholders, this may seem a fair trade-off for the

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attendant short-term loss of certain personal liberties (Gerbasi, Bonnie, & Binder, 2000; Swanson, Swartz, Elbogen, Wagner, & Burns, 2003; Swartz, Swanson, & Monahan, 2003; Swartz, Swanson, Wagner et al., 2003). However, others fundamentally oppose legal and other kinds of leverage as coercive, arguing, for example, that mandated community treatment infringes on civil liberties, is largely ineffective in community care settings (Allen & Smith, 2002; Hoge & Grottole, 2000; Mattison, 2000; Stefan, 1987; Stein & Diamond, 2000), and may drive individuals away from treatment for fear of being involuntarily committed (Campbell & Schraiber, 1989; Swartz, Swanson, & Hannon, 2003). In sum, prior research shows that both clinicians and consumers often express ambivalent attitudes regarding the use of leveraged treatment. Clinicians generally approve of its use (Swartz et al., 2003); however, they also express concern that the use of leverage may harm the therapeutic relationship, particularly in the short-term (Romans, Dawson, Mullen, & Gibbs, 2004). Consumers convey similar ambivalence. Specifically, consumers may express concern regarding perceived stigma or strong restrictions on personal freedoms, sometimes concluding that the process was "mainly negative really," but also recognizing that "it saved my life" (Dawson, Romans, Gibbs, & Ratter, 2003, p. 251).

While scholars have debated the legal rationale and clinical effectiveness of mandated community treatment and related policies (cf., Monahan et al., 2001) less attention has been given to mental health consumers' perceptions of these same issues. To date, one study has explicitly examined perceptions of fairness and effectiveness of leveraged treatment among consumers with schizophrenia, finding that those who endorsed the effectiveness of treatment leverages and related pressures also tended to view mental illness as a biomedical disease, or being consequent to imbalances in brain chemistry, genetic vulnerabilities and stress (Swartz, Wagner, Swanson, & Elbogen, 2004). Consumers who endorsed leverage were also more likely to view themselves as ill and in need of treatment, even though they reported fewer psychiatric symptoms and were less likely to live in dangerous neighborhoods than their counterparts who considered leveraged treatment to be unfair and ineffective (Swartz et al., 2004).

The current study examines these issues using a larger, multisite sample (pooled N=1,011), with more diversity in psychiatric diagnoses and a more comprehensive evaluation of current clinical factors that may shape consumers' perceptions of the fairness and effectiveness of leverage than has been used to examine these same issues in the past. Specifically, the current paper explores the following four interrelated questions:

Q1) Do persons with serious mental illness think leveraged treatment is fair and effective?
Q2) What are the characteristics of persons who think that leveraged treatment is fair or unfair, effective or not effective?
Q3) How are fairness and effectiveness related?
Q4) How do perceived barriers to care relate to the perceived fairness of leveraged treatment?

Cross-sectional survey data do not provide clear evidence of cause and effect. However, by examining multivariate patterns of association in these data, we are able to refine the questions of interest to guide more definitive future studies of these issues.

METHOD

The methodology of this study is described in detail in Monahan et al. (2005). In brief, approximately 200 outpatients from publicly funded mental health treatment programs were sampled from each of five sites: Chicago, IL, Durham, NC, San Francisco, CA, Tampa, FL, and Worcester, MA. A single structured interview, lasting about 90 minutes, was administered in person by a trained lay interviewer. Interviews covered multiple topics related to leverage and other informal pressures to adhere to community-based mental health treatment, including frequency and distribution of types of leverage and various clinical characteristics potentially related to leverage. Sample inclusion criteria were: age 18-65 years, speaker of English or Spanish, had first mental health treatment episode at least 6 months ago, had at least one outpatient treatment encounter with a publicly-supported mental health service provider within the past 6 months. Persons treated only for substance abuse,

and not for any another psychiatric disorder, were excluded. Otherwise, the inclusion criteria did not specify particular mental health diagnoses or level of acuity.

At the Worcester, Tampa, and San Francisco sites, potential subjects were recruited sequentially in the waiting rooms of outpatient clinics of the community mental health centers. In Durham, a list of potentially eligible subjects was created from management information system data, and these patients were randomly selected to be approached for participation in the study. The Chicago site used both sampling methods, enrolling about half the sample using the waiting room approach and the other half using the eligibility list approach. Participants were enrolled after receiving a complete description of the study and providing written informed consent. All sites received approval from their respective Institutional Review Boards. Refusal rates varied from 2% to 13% across sites. Participants were paid $25 for the interview.

Measures

Dependent variables. In the context of an interview gathering detailed information about mandated community treatment, several interview items were used to elicit subjects' overall appraisal of the effects of the treatment leverages and pressures that they had experienced. Following Swartz et al. (2004), the index of *fairness* included the following items: *Overall, the pressures or things people have done to try to get me to get treatment or stay in treatment…*

(1) *Were done by people who tried to be fair to me*
(2) *Were done for my own good*
(3) *Were not done out of real concern for me* (reverse coded)
(4) *Didn't make me feel respected as a person* (reverse coded)

The index of *effectiveness* included the following items: *Overall, the pressures or things people have done to try to get me to treatment or stay in treatment…*

(1) *Made me more likely to keep appointments and take my medications*
(2) *Help me get well and stay well*
(3) *Help me gain more control over my life*
(4) *Should be done again in the future*

Each item was rated on a 5-point scale ranging from "strongly agree" to "strongly disagree" and then summed. The summed scales for these two measures were coded so that higher scores indicated that the subject viewed treatment leverage and pressures as fair and effective, respectively. Both scales appeared to be measuring the underlying concepts of fairness (α=0.70) and effectiveness (α=0.70).

Independent Variables

Independent variables were chosen for analysis based on prior clinical and epidemiological studies and were organized into five domains: (1) socio-demographic characteristics; (2) social environment; (3) clinical profile; (4) history of coercion; and (5) insight into illness.

Sociodemographic characteristics. Factors included in the first domain were: *age* (respondents 45 or older were compared to younger respondents; median age = 44 years), *racial status* (nonwhite vs. white; white served as the reference group), *gender* (female served as the reference group), *marital status* (married or cohabiting vs. single; single served as the reference group), and *education* (high school or higher vs. no high school; no high school served as the reference group).

Social environment. Participants were asked eight questions about *barriers to treatment/care*. Examples of questions included were: Did you delay getting help because…"You think that going to help for your mental health problem probably wouldn't do any good?" "Did you think your mental health problem would get better by itself?" "It is too difficult to get treatment because of distance or transportation problems?" Responses from these items were summed to form a scale ranging from 0 to 8, with higher scores indicating more barriers (α=0.74) (cf., Van Dorn et al., manuscript under review).

Respondents were also asked if, in the past year, they lived with or near people they were afraid of; this variable serves as a proxy for residing in a

dangerous environment. A dichotomous variable indicating victimization was coded positive if the participant reported any violent or nonviolent victimization in the past 6 months. Items for the victimization composite correspond to those asked in the MacArthur Violence Risk Assessment Study (Steadman et al., 1998). Finally, in order to assess general social support, participants were asked whether they had family or friends they could count on in times of trouble. Respondents indicating that this was true 'most of the time' were compared to respondents endorsing 'some of the time' or 'never.'

Clinical, psychological and behavioral profile. The anchored version of the *Brief Psychiatric Rating Scale* (BPRS; Moerner, Mannuzza, & Kane, 1988) was used to assess current psychiatric symptoms. *General satisfaction with life*, i.e., the subject's own perception of his or her life, was assessed by a single item rated on a 7-point scale from 1 = *terrible* to 7 = *delighted*. This item was dichotomized with those indicating that they were 'satisfied,' 'mostly pleased,' or 'delighted' compared to less favorable ratings. The number of *years in treatment* was dichotomized above the median (those above the median of 21 years were compared to those at or below the median).

Serious *violent behavior* during the past six months was operationalized as any assaultive behavior causing bodily injury to another person, any use of a lethal weapon to harm or threaten someone or any sexual assault in the past year. This conceptualization of serious violence corresponds to that used in the MacArthur Risk Assessment Study and prior studies examining violence in persons with serious mental illness. *Criminal justice contact* was assessed via a single self-report item asking if respondents had ever been arrested for any crime. Being *hospitalized within the past 6 months*, the number of *lifetime hospitalizations*, and the number of *outpatient visits* during the past month were included in the model as well; the later two factors were dichotomized above the median.

Subjects were also asked about their *alcohol and drug use* during the past 30 days. If participants had drunk any alcohol or taken street drugs or non-prescribed psychoactive substances, follow-up questions were asked from the adapted *Michigan Alcoholism Screening Test* (MAST; Selzer, 1971) and the *Drug Abuse Screening Test* (DAST; Skinner, 1982). For analysis, we combined alcohol and drug abuse into a single dichotomous variable, coded 1 = *one or more substance abuse symptoms* and 0 = *no substance abuse symptoms*. The *Global Assessment of Functioning* scale (GAF; American Psychiatric Association, 1994; Endicott, Spitzer, Fleiss, & Cohen, 1976) was used to score functioning, with low scores indicating more severe functional impairment. Chart diagnoses were used to code participants' *primary psychiatric disorder* (psychotic disorders were compared to non-psychotic disorders). Finally, we used a set of six Likert-scaled items to assess participants' experience of *personal autonomy* in everyday life. Examples include: "How much say did you have about what you would do during the day?" "How much say did you have about how much of your money you could spend?" and "How much say did you have about who you would spend time with during the day?" The scale items were all significantly intercorrelated and demonstrated good internal reliability.

History of leverage and coercion. Respondents' history of experiencing *legal or social welfare system leverage to promote treatment adherence* was assessed with two dichotomous variables: (1) experiencing any one form of leverage—money, housing, criminal sanction, or outpatient commitment—vs. none; (2) experiencing two or more forms of leverage vs. none. *Perceived coercion* was measured with a subscale of the MacArthur Admission Experiences Scale modified for outpatient use (Swartz, Wagner, Swanson, Hiday, & Burns, 2002). Scale items elicited participants' subjective experiences of force, threats, and other pressures to participate in outpatient mental health treatment. The scale includes 15 items (1 = *strongly agree*, 5 = *strongly disagree*) and is calculated as the sum of responses indicating coercive experiences (a=0.88 for current sample) divided by the total number of questions.

A dichotomized covariate assessing whether or not the respondent had ever been *involuntarily hospitalized* was also included in the model. Finally, participants were asked whether they had been reminded or warned that noncompliance with medications or missing mental health appointments could result in hospitalization, involuntary commitment, police notification, loss of spending money, or loss of housing; these questions were combined

into dichotomous measures of medication or appointment adherence. A composite scale—*adherence reminders*—was created for the combined number of reminders (i.e., none, medication or appointment reminders, both medication and appointment reminders with the latter two compared to the former.)

Insight into illness. The *Insight and Treatment Attitudes Questionnaire* (ITAQ; McEvoy et al., 1989) was used to assess participants' recognition and acknowledgment of their psychiatric illness and need for treatment. The *Drug Attitude Inventory* (DAI) was used to assess participants' attitudes toward taking psychotropic medications. The DAI focuses on perceptions of benefits, adverse side effects, and other frequent responses people have to antipsychotic medications. Other studies have shown it to be a reliable predictor of medication compliance (Hogan & Awad, 1992).

Statistical Analysis

Given the number of variables measured, we used stepwise ordinary least squares regression as a variable reduction procedure to examine the joint associations between participants' demographic characteristics, social environment, clinical profile, history of coercion, and illness insight, and their perceptions of the fairness and effectiveness of leveraged community treatment and related treatment pressures. A stepwise regression was conducted for each domain with selection threshold set to $p \leq 0.15$. Covariates retained from each domain were then included in a final stepwise model, with selection also set to $p \leq 0.15$.

Pooling the data. These data are drawn from 5 sites, all of which contributed varying amounts of information for both the independent and dependent variables. In order to account for possible site effects, all models were specified with site modeled as a fixed effect. Additionally, the Huber-White sandwich estimator of variance was used to account for the clustering of observations within sites (Huber, 1967; White, 1982). Clustered samples have larger variances than would occur with simple random sampling. Without adjusting for this, the precision of parameter estimates can be exaggerated and differences can appear statistically significant when they are not (Leaf, Myers, & McEvoy, 1991). Thus, all analyses, in addition to controlling for site as a fixed effect, used a robust variance estimator to account for design effects. All analyses were conducted using Stata 8.2 (StataCorp, 2003).

RESULTS

Sample characteristics. Table 1 presents the domain specific characteristics of participants by site.

Percent of subjects perceiving leveraged treatment to be fair and effective. The percentage of respondents reporting that they perceived treatment leverage to be fair (average item score of 'strongly agree' or 'agree') ranged from 55.3% to 68.7% across sites, while the percentage perceiving leverage to be effective ranged from 48.2% to 59.5%.

Correlates of perceived fairness and effectiveness. Table 2 presents correlation coefficients showing the magnitude and statistical significance of bivariate associations between the appraisal of fairness and effectiveness and a series of putative predictive factors, grouped into one of five domains: (1) sociodemographic characteristics, (2) social environment, (3) clinical characteristics, (4) history of coercion, and (5) insight into illness. In the domain of sociodemographic characteristics, there was a significant and positive relationship between education and perceived fairness of treatment leverage. There were no significant bivariate relationships between the sociodemographic characteristics and perceived effectiveness.

In the social environment domain, barriers to care, residing in a dangerous environment, and reporting recent victimization were all significantly and negatively related to the perception of fairness of leverage. However, perceived social support was positively related to the fairness of leverage. Perceptions of the effectiveness of leverage were negatively associated with recent victimization, while social support was positively associated with this outcome.

Considering the clinical domain, reporting overall satisfaction with one's life was positively associated with both outcomes, whereas reporting serious violent behavior and having been hospitalized in the past six months were negatively associated with both outcomes. Higher numbers of total symptoms, as measured with the BPRS, were

Table 1
Profile of Sample: Means and Percents of Domain Specific Characteristics, By Site

	Chicago (N=205)		Durham (N=204)		San Francisco (N=200)		Tampa (N=202)		Worcester (N=200)	
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Domain 1: Sociodemographic characteristics										
Age (mean ±SD years)	44.2±9.8		44.3±11.0		46.7±9.3		44.3±10.2		41.9±10.0	
Non-white	76	37.8	130	64.0	92	46.7	83	41.1	57	28.5
Male	117	57.1	66	32.4	129	64.5	95	47.0	102	51.0
Cohabitation	30	14.6	50	24.5	25	12.5	45	22.4	32	16.0
Education: high school or higher	145	70.7	142	69.6	150	75.4	119	58.9	141	70.5
Domain 2: Social environment										
Barriers to care (mean ±SD)	26±2.1		1.8±1.9		2.6±2.3		2.5±2.3		2.6±2.1	
Dangerous environment	58	28.6	48	23.7	67	33.5	39	19.4	43	21.7
Victimization	58	28.3	43	21.1	83	41.5	54	26.7	40	20.0
Social support	95	46.6	116	57.4	78	39.0	123	61.2	113	56.8
Domain 3: Clinical, psychological and behavioral profile										
BPRS (mean ±SD)	31.8±8.6		32.9±8.9		32.9±8.4		30.5±7.6		32.9±8.4	
Feel about your life	94	46.1	100	49.0	70	35.0	93	46.0	82	41.6
Years in treatment (mean ±SD)	21.5±11.0		19.3±11.5		23.0±11.8		21.0±11.5		20.1±10.9	
Serious violent behavior	7	3.4	9	4.4	17	8.5	10	5.0	13	6.5
History of arrest	107	52.2	81	39.7	125	62.5	102	50.5	97	48.5
Total prior hospitalizations (Lifetime 4+)	112	55.5	97	47.6	110	55.3	100	49.8	126	63.3
Hospitalized in past 6 months	22	10.7	29	14.2	31	15.6	35	17.9	41	21.0
Visits>3/month	172	85.2	43	24.6	100	51.6	53	29.1	102	51.8
Substance abuse	38	18.5	34	16.7	71	35.5	28	13.9	43	21.5
GAF (mean ±SD)	44.3±8.9		45.3±11.9		52.4±7.3		55.8±10.4		42.2±8.9	
Psychotic diagnosis	99	48.3	88	43.1	85	42.5	100	49.5	83	41.5
Personal autonomy (mean ±SD)	22.7±5.7		23.6±6.1		23.4±6.3		21.6±6.5		24.0±5.7	

...continued

Table 1 (continued)
Profile of Sample: Means and Percents of Domain Specific Characteristics, By Site

	Chicago (N=205)		Durham (N=204)		San Francisco (N=200)		Tampa (N=202)		Worcester (N=200)	
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Domain 4: History of coercion										
History f leverages										
No leverages [reference]	99	48.3	114	55.9	82	41.0	106	52.5	91	45.5
1 leverage	57	27.8	57	27.9	72	36.0	51	25.3	56	28.0
2+ leverages	49	23.9	33	16.2	46	23.0	45	22.3	53	26.5
Involuntary hospitalization	74	36.1	115	57.2	107	53.5	108	54.0	96	48.5
MacArthur perceived coercion scale (mean ±SD)	2.0±0.6		2.2±0.6		2.0±0.5		2.2±0.6		2.1±0.5	
Adherence reminders										
No adherence reminders [reference]	101	49.3	111	54.4	118	59.0	91	45.1	108	54.0
Either medication or appointment reminders	44	21.5	43	21.1	47	23.5	36	17.8	45	22.5
Both medication and appointment reminders	60	29.3	50	24.5	35	17.5	75	37.1	47	23.5
Domain 5: Illness insight										
ITAQ (mean ±SD)	17.9±4.0		18.3±3.9		18.6±3.3		17.9±4.4		18.5±3.7	
DAI (mean ±SD)	6.8±2.0		7.0±2.0		6.4±2.5		6.9±1.9		6.5±2.4	

Table 2
Associations Between Characteristics Associated with Perceived Fairness and Effectiveness of Mandates

	PERCEIVED FAIRNESS		PERCEIVED EFFECTIVENESS	
	r	p	r	p
Domain 1: Sociodemographic characteristics				
Age (≥45)	-0.01	0.73	-0.01	0.86
Non-white	0.02	0.64	0.01	0.71
Male	0.03	0.31	-0.02	0.57
Cohabitation	0.01	0.77	-0.01	0.99
Education: high school or higher	0.09	0.01	-0.04	0.17
Domain 2: Social environment				
Barriers to care	-0.16	0.00	-0.04	0.19
Dangerous environment	-0.10	0.00	-0.05	0.10
Victimization	-0.11	0.00	-0.10	0.00
Social support	0.15	0.00	0.09	0.00
Domain 3: Clinical, psychological and behavioral profile				
BPRS (≥31)	-0.12	0.00	-0.05	0.10
Feel about your life	0.14	0.00	0.12	0.00
Years in treatment (≥21)	-0.06	0.08	-0.03	0.37
Serious violent behavior	-0.08	0.01	-0.07	0.04
History of arrest	-0.04	0.22	-0.02	0.50
Total prior hospitalizations (Lifetime 4+)	0.01	0.91	0.08	0.01
Hospitalized in past 6 months	-0.06	0.04	-0.07	0.04
Visits>3/month	0.01	0.77	-0.03	0.29
Substance abuse	-0.02	0.52	-0.04	0.21
GAF	0.08	0.01	0.03	0.30
Psychotic diagnosis	-0.03	0.43	0.12	0.00
Personal autonomy	0.15	0.00	0.01	0.80
Domain 4: History of coercion				
History of leverages				
No leverages [reference]	0.01	0.68	-0.08	0.01
1 leverage	0.06	0.05	0.12	0.00
2+ leverages	-0.08	0.01	-0.03	0.34
Involuntary hospitalization	-0.05	0.13	0.02	0.64
MacArthur perceived coercion scale	-0.32	0.00	-0.12	0.00
Adherence reminders				
No adherence reminders [reference]	0.07	0.03	-0.11	0.00
Either medication or appointment reminders	0.03	0.28	0.07	0.02
Both medication and appointment reminders	-0.11	0.01	0.06	0.08
Domain 5: Illness insight				
ITAQ	0.11	0.00	0.13	00.00
DAI	0.18	0.00	0.16	0.00

associated with lowered perceived effectiveness and fairness of treatment leverage (marginally so for the latter.) Higher scores on both the GAF and personal autonomy scale were significantly and positively associated with perceived fairness, while years in treatment was negatively associated with fairness at a level approaching statistical significance. Finally, both lifetime hospitalizations and having a psychotic diagnosis were positively associated with perceived effectiveness.

Within the domain of coercive experiences, higher scores on the MacArthur perceived coercion subscale were associated with significantly lower scores on the indices of perceived fairness and effectiveness of treatment leverage. Reporting having experienced only one type of leverage was positively associated with perceived fairness and effectiveness of leverage, while reporting two or more types of leverage was negatively associated with perceived fairness. Finally, those reporting both medication and appointment adherence pressures were less likely to perceive leverage to be fair. However, reporting either medication or appointment pressures or reporting both types of pressures were positively associated with perceptions of the effectiveness of leverage. Finally, with respect to respondents' view of their illness, higher scores on both the ITAQ and the DAI were significantly associated with greater perceived fairness of treatment leverage and pressures, as well as the effectiveness of these pressures.

Multivariable associations were tested using ordinary least squares regression procedures. For the regression analyses, candidate variables within each of the five domains were tested using stepwise selection procedures as a variable reduction process, with the inclusion criterion set at $p \leq 0.15$; each domain was tested separately. After testing each domain, variables selected into the model from each domain were combined and re-tested in a second stepwise process to determine a final model. All models included controls for demographic variables—age, race, gender, education, and marital (cohabitation) status— in addition to controlling for site and the clustering of observations within site.

Perceived fairness. Results of the multivariable analysis by domain showed that perceptions of fairness diminished as the total number of perceived barriers to care increased. Both recent victimization and perceptions of social support were related to perceived fairness at levels approaching statistical significance. In the clinical domain, perceptions of fairness increased as the GAF score and the personal autonomy scale increased. Scoring above the median on the BPRS and engaging in serious violence in the past six months were both associated with decreased perceptions of the fairness of leverage at levels approaching statistical significance, while the opposite trend was found for those reporting four or more lifetime hospitalizations.

High scores on the MacArthur perceived coercion subscale were associated with decreased perceptions of the fairness of leverage, while experiencing either medication reminders or appointment reminders (or both) was associated with the perception of fairness at levels approaching statistical significance. The final domain indicates that increases in the ITAQ and the DAI are both associated with higher perceptions of the fairness of leverage.

The final model assessing the fairness of treatment leverage indicates that those with four or more lifetime hospitalizations and higher ITAQ scores were more likely to believe that leverage is fair, while those with higher scores on the MacArthur Perceived Coercion Scale were more likely to report the opposite. The significance of these three items suggests that each contribute independently to the perceived fairness of treatment leverage and pressures. Covariates measuring barriers to care, victimization, BPRS, GAF, and the DAI were all associated with perceived fairness at levels approaching statistical significance, the latter two being positively associated.

Perceived effectiveness. No covariates in the social environment domain were significantly related to perceived effectiveness of leverages. However, both victimization and social support were associated with the outcome at a level approaching statistical significance. In the clinical domain, the number of years in treatment, reporting recent serious violence, and being hospitalized in the past 6 months were all negatively associated with perceptions of the effectiveness of leverages. Conversely, having four or more lifetime psychiatric hospitalizations, higher GAF scores, and having a psychotic disorder diagnosis were all positively associated with endorsing the effectiveness of leverages.

Table 3
Cross-site Multivariable Models of Characteristics Associated with Perceived Fairness and Effectiveness of Mandates

	PERCEIVED FAIRNESS				PERCEIVED EFFECTIVENESS			
	DOMAIN MODELS		FINAL MODEL		DOMAIN MODELS		FINAL MODEL	
	Beta	(95% CI)	Beta	(95% CI)	Beta	(95% CI)	Beta	(95% CI)
Domain 1: Social environment								
Barriers to care	-0.18	(-0.32, -0.03) *	-0.09	(-0.20, 0.03) †				
Dangerous environment								
Victimization	-0.65	(-1.59, 0.29) †	-0.48	(-1.05, 0.09) †	-0.61	(-1.62, 0.40) †	-0.42	(-1.07, 0.22) †
Social support	0.48	(-0.22, 1.17) †			0.35	(-0.14, 0.83) †		
Model significance	Adjusted R-sq=0.069				Adjusted R-sq=0.032			
Domain 2: Clinical, psychological and behavioral profile								
BPRS (≥31)	-0.43	(-0.94, 0.07) †	-0.18	(-0.51, 0.14) †				
General satisfaction with life								
Years in treatment (≥21)					-0.49	(-0.82, -0.16) *	-0.59	(-0.95, -0.23) **
Serious violent behavior	-0.93	(-2.01, 0.15) †			-0.60	(-0.99, -0.21) *		
History of arrest								
Total prior hospitalizations (Lifetime 4+)	0.27	(-0.06, 0.60) †	0.34	(0.02, 0.66) *	0.66	(0.18, 1.15) *	0.45	(-0.16, 1.06) †
Hospitalized in past 6 months					-0.55	(-0.95, -0.15) *	-0.44	(-0.89, 0.01) †
Visits >3/month								
Substance abuse								
GAF	0.03	(0.01, 0.04) *	0.01	(-0.01, 0.03) †	0.03	(0.01, 0.04) **	0.01	(0.00, 0.01) **
Psychotic diagnosis					0.86	(0.15, 1.56) *	0.75	(0.04, 1.47) *
Personal autonomy	0.04	(0.00, 0.09) *						
Model significance	Adjusted R-sq=0.061				Adjusted R-sq=0.066			

...continued

Table 3 (continued)
Cross-site Multivariable Models of Characteristics Associated with Perceived Fairness and Effectiveness of Mandates

	PERCEIVED FAIRNESS				PERCEIVED EFFECTIVENESS			
	DOMAIN MODELS		FINAL MODEL		DOMAIN MODELS		FINAL MODEL	
	Beta	(95% CI)	Beta	(95% CI)	Beta	(95% CI)	Beta	(95% CI)
Domain 3: History of coercion								
History of leverages								
0 lifetime leverages [reference]								
1 lifetime leverage					0.74	(0.14, 1.34) *	0.66	(0.04, 1.28) *
2+ lifetime leverages					0.16	(-0.54, 0.85)	0.07	(-0.54, 0.66)
Involuntary hospitalization								
MacArthur perceived coercion scale	-1.32	(-1.99, -0.66) **	-1.15	(-1.68, -0.62) **	-1.11	(-1.49, -0.73) ***	-0.82	(-1.28, -0.35) **
Adherence Reminders								
No adherence reminders [reference]								
Either medication or appointment reminders	0.30	(-0.14, 0.73) †			0.72	(0.08, 1.36) *	0.57	(0.08, 1.06) *
Both medication and appointment reminders	-0.25	(-0.70, 0.19) †			0.76	(0.44, 1.09) **	0.47	(-0.06, 1.01) †
Model significance	Adjusted R-sq=0.116				Adjusted R-sq=0.081			
Domain 4: Illness insight								
ITAQ	0.05	(0.00, 0.10) *	0.05	(0.01, 0.09) *	0.07	(0.01, 0.13) *	0.06	(0.01, 0.12) *
DAI	0.26	(0.11, 0.41) **	0.14	(-0.01, 0.28) †	0.24	(0.10, 0.38) *	0.17	(0.05, 0.28) *
Model significance	Adjusted R-sq=0.075		Adjusted R-sq=0.165		Adjusted R-sq=0.068		Adjusted R-sq=0.139	

Note: All models control for clustering of site, age, race, sex, marital status, and education
Statistical Significance: † p<0.10 (trend); * p<.05; ** p<.01; *** p<.001

Respondents reporting experience with any one type of leverage to adhere to treatment were significantly more likely to endorse the effectiveness of leverage than those with no lifetime leverage (there were no significant differences for those with two or more types of leverage compared to those with no leverage). Those reporting either medication or treatment adherence reminders or both of these kinds of reminders were significantly more likely than those endorsing no such reminders to endorse the effectiveness of leverage. Higher perceived coercion was associated with lower perceived effectiveness. Finally, higher scores on both the ITAQ and DAI were associated with higher perceived effectiveness.

Consistent with the domain models, years in treatment, higher GAF scores, having a psychotic diagnosis, reporting one lifetime leverage, higher scores on the MacArthur perceived coercion subscale, reporting either medication or treatment adherence reminders, and having high ITAQ or DAI scores all maintained their significance in the final multivariable model. Recent victimization, number of lifetime hospitalizations, having been in the hospital in the past 6 months, and reporting both medication and treatment adherence reminders were marginally associated with more favorable views of the effectiveness of treatment leverages.

Finally, the two outcome variables—fairness and effectiveness—were themselves highly correlated ($r = 0.50$). As expected, there was a strong association between the perceptions of fairness and effectiveness.

Relationship between barriers and perceived effectiveness of leverage. Prior research points to a complex constellation of factors, including psychiatric diagnosis and barriers to care, as being related to experiences with or perceptions of the fairness and effectiveness of leveraged community treatment (Monahan et al., 2005; Swartz et al., 2004). Specifically, in a sample of persons with schizophrenia, perceived barriers to care were related to decreased perceptions of the fairness of leverage (Swartz et al., 2004); however, persons with schizophrenia or other psychotic disorders appear to be more likely than those with other mental health diagnoses to receive leveraged community treatment (Monahan et al., 2005).

Based on this prior research, we explored the interaction between psychotic disorder and perceived barriers to care on perceptions of fairness while controlling for the effectiveness of the leverage. As shown in Table 4, when controlling for perceived effectiveness in addition to the covariates that were either significant or approached significance in the final *fairness* model (Table 3), the interaction between psychotic disorder and perceived barriers to care shows a significant and negative relationship with perceptions of the fairness of leverages. This finding of an inverse relationship between barriers to care and perceptions of fairness of leverage for those with a psychotic diagnosis, even when controlling for the effectiveness of the leverage, is a relationship that prior research was unable to assess due to limitations in the sample (Swartz et al., 2004); however, this effect has important clinical implications that are discussed in what follows.

DISCUSSION

This paper set out to extend the findings of Swartz and colleagues (2004) regarding the fairness and effectiveness of legal and other forms of leverage and informal pressures promoting treatment adherence, by employing a larger and more diverse sample of persons with mental illness. The current analyses indicate a negative relationship between perceived coercion and both the fairness and effectiveness of leverage. Conversely, these data also suggest a positive relationship between insight, as measured by the ITAQ, and perceived fairness and effectiveness of leverage: people who view themselves as ill or in need of treatment were more likely to consider leverage to be fair and effective.

In addition to the independent effects of perceived coercion and insight into one's illness, other factors were significantly associated with the outcomes. Specifically, perceptions of fairness were also impacted by the number of lifetime hospitalizations, with those reporting four or more lifetime hospitalizations also more likely to endorse the fairness of leverage. The effectiveness of leverage was associated with: fewer years in treatment, higher GAF scores, having a psychotic diagnosis, experiencing only one lifetime leverage, receiving reminders to keep mental health appointments or to take medication, and higher scores on the Drug Attitude Inventory.

Table 4
Cross-site Multivariable Model of Interaction Between Psychiatric Diagnosis and Barriers to Care

	PERCEIVED FAIRNESS BETA	(95% CI))
Perceived effectiveness of MCT	0.52	(0.41, 0.63) ***
Psychotic diagnosis X barriers to care	-0.26	(-0.41, -0.11) **
Barriers to care	0.03	(-0.14, 0.19)
Psychotic diagnosis	0.25	(-0.31, 0.81)
Victimization	-0.25	(-0.54, 0.03) †
BPRS (≥31)	-0.06	(-0.34, 0.21)
Total prior hospitalizations (Lifetime 4+)	0.14	(-0.18, 0.45)
GAF	0.01	(-0.01, 0.02)
MacArthur perceived coercion scale	-0.80	(-1.28, -0.32) **
ITAQ	0.01	(-0.01, 0.03)
DAI	0.04	(-0.06, 0.15)
Model significance		Adjusted R-sq=0.420

Note: Model controls for clustering of site, age, race, sex, marital status, and education
Statistical Significance: † p<0.10 (trend); * p<.05; ** p<.01; *** p<.001

Consistent with Swartz and colleagues' (2004) prior study, we also found a strong and significant correlation between perceived *fairness* and perceived *effectiveness* of leveraged treatment. In other words, consumers' appraisal of the fairness of leverage was largely conditional upon its perceived effectiveness. Additionally, participants with a history of multiple psychiatric hospitalizations were more likely to endorse the perceived fairness of leverage. Overall, the findings from the current paper corroborate the idea that individuals who perceive leverage to be fair are those who generally perceive this approach to be effective. However, a history of more frequent hospitalizations may imply that an individual has had less success with voluntary engagement in community-based mental health services, and may therefore—with insight—perceive leverage to be needed, and thus fair.

The strong and positive relationship between fairness and effectiveness did not hold for all participants in the study. In particular, individuals with psychotic disorders who also perceived many barriers to care were significantly more likely to view leverage as unfair, regardless of how effective they thought the leverage to be. This finding is of interest in light of other research showing that consumers with greater barriers to care are more likely to receive leveraged community treatment—unless they also have substantial social support (Van Dorn et al., manuscript under review). So while the majority of

persons with psychiatric disorders may adhere to the notion that if mandates work, they are fair; persons with psychotic disorders may present a more complex representation of this relationship, particularly when barriers to care are present.

While this study identifies a constellation of closely associated attitudes related to both perceived fairness and effectiveness of leveraged community treatment, the results may be somewhat limited in their generalizability. First, in a cross-sectional survey using a single interview, causal ordering of variables is very difficult to determine. A longitudinal design would be needed to more definitively explore these relationships. Next, these data did not contain variables assessing the participants' perceptions of the cause of mental illness, which has been shown to impact consumers' perceptions of the fairness and effectiveness of leveraged community treatment (Swartz et al., 2004).

In sum, these data indicate that the experience of coercion negatively affects perceptions of both the fairness and effectiveness of leveraged community treatment. However, consumers who view themselves as ill tend to believe that they benefit from a range of formal and informal sanctions to adhere to treatment, and that these sanctions generally are applied in their best interest and out of concern for their well being. This belief does not hold for persons with psychotic disorder who also report encountering barriers to care; these individuals tend to view leverage as unfair even if they think it is effective.

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