Published in final edited form as:

J Correct Health Care. 2010 April ; 16(2): 106–116. doi:10.1177/1078345809356523.

Self-reported physical health of inmates: Impact of incarceration and relation to optimism

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Abstract

This study investigated the relationship between inmates' physical health concerns and optimism. Optimism has been consistently associated with physical health in community samples, but little research has examined this potentially malleable variable in an inmate population. This study of 502 male and female jail inmates attempts to bridge this gap. Results showed optimism was negatively associated with physical health concerns upon entry to jail and prior to release or transfer. Additionally, optimism assessed upon entry to jail predicted modest decreases in physical health concerns over incarceration. Results suggest that optimism is a health-related variable that may be beneficial when optimism-increasing components are integrated into treatment.

Keywords

physical health; optimism; jail; inmates

From June 2005 to June 2006, the US prison and jail population increased 2.8%, housing 2,245,189 inmates (Bureau of Justice Statistics, 2007). This housing is expensive and a substantial part of the cost is medical care – totaling \$3.3 billion in state prisons during 2001 (Stephan, 2004). One third of jail inmates in a nationally representative sample reported a physical health problem, many of which were present prior to incarceration (Maruschak & Beck, 2001; Maruschak, 2006). Inmates have a wide variety of health problems ranging from arthritis, asthma, and backaches, to more serious diseases such as hepatitis, HIV, and tuberculosis (Conklin, Lincoln & Tuthill, 2000; Hammett, Harmon & Rhodes, 2002; National Commission on Correctional Health Care, 2002; Staton-Tindall, Duvall, Leukefeld & Oser, 2007).

Inmates also have a number of risk factors for health problems. Many come from neighborhoods mired in poverty with limited access to community based health care and often have lower levels of formal education (Glaser & Greifinger, 1993). Additionally, the prevalence of drug and alcohol abuse, and associated health problems, is high among offenders. Moreover, the increasing rate of incarceration of females and older individuals further taxes the medical resources of jails and prisons, as both populations have a higher likelihood of physical health concerns relative to young male inmates (Maruschak & Beck,

2001; Maruschak, 2006). In general, inmates have a wide variety of risk factors that have been associated with poor physical health (Bureau of Justice Statistics, 2004; Garrity, Hiller, Staton, Webster & Leukefeld, 2002; Harlow, 2003; Staton-Tindall et al., 2007). While useful for planning and prevention purposes, these variables are relatively fixed and do not readily point to areas of intervention for individuals currently incarcerated.

As the care for the physical health of offenders is becoming increasingly expensive, interventions that can improve the offenders' physical health are desirable. Our interest is in identifying more malleable psychological factors that are related to physical health and that can be incorporated into interventions for those currently incarcerated. One possible psychological factor is optimism, the expectation of positive outcomes and confidence in future success (Domino & Conway, 2001; Scheier & Carver 1985).

Cross-sectional results from studies in the general community indicate that higher optimism is associated with fewer mental and physical health problems (Aspinwall & Taylor, 1992; Brissette, Scheier & Carver, 2002; Peterson & Bossio, 2001; Ustundag-Budak & Mocan-Aydin, 2005). More importantly, in longitudinal studies, optimism has been prospectively correlated with outcomes such as a decreased likelihood of becoming ill, reduced severity and length of illness, and faster and more complete recovery following surgery (Carver & Scheier, 2002; Scheier & Carver, 1985; 1987; Scheier et al., 1989). For example, in a longitudinal study of men undergoing coronary artery bypass surgery, Scheier et al. (1989) found that higher levels of optimism the day before surgery was associated with faster rates of physical recovery during hospitalization and better postsurgical quality of life at 6 month and 5 year follow-ups.

Aspinwall, Richter and Hoffman (2001) have offered three explanations for the optimism/positive outcome relationship. First, optimists are likely to utilize more effective and adaptive coping strategies, such as choosing and maintaining appropriate goal-directed behaviors. Second, optimists are better able to distinguish controllable situations from those that are uncontrollable and thus are more likely to demonstrate acceptance in the face of events that they cannot control. Finally, optimists demonstrate more flexible and adaptive thinking than pessimists. Optimists pay more attention to the most useful information available and show evidence of greater flexibility. Aspinwall et al. (2001) posit that optimists' openness to new information allows them to better process information in their environment and respond accordingly. Findings from research with cancer patients indicate that optimists address stressors by reframing negative situations, scan the environment looking for information to apply to their situation, plan and expect recovery, and implement goals that will help them to achieve recovery (Carver et al., 1993; Carver & Scheier, 2002).

Not only have higher levels of optimism been related to better health outcomes in the general community, but optimism is presumably amenable to intervention. Research indicates that there are several interventions that can help individuals increase their level of optimism (Carver & Scheier, 2002; Gillham & Reivich, 2004). One approach is cognitive behavioral therapy (CBT), which may increase optimism by helping individuals change their negative thought patterns. In CBT, individuals learn to identify and evaluate their negative thinking patterns, and generate more realistic and optimistic thoughts and beliefs. Other therapies that teach individuals to set and reach realistic goals also appear to be related to increased levels of optimism (Carver & Scheier, 2002).

Although there is extensive literature examining the relationship between optimism and physical and psychological health in the general community, to date only one article is known to address optimism in an inmate population (van Harreveld, Pligt, Claassen, & Dijk, 2007). In a sample of 30 male inmates in the Netherlands, optimism was associated with

lower concurrent self-reports of mental and physical health problems. Researchers have yet to replicate this finding with female inmates, with larger samples of inmates, or in samples of inmates incarcerated in the United States correctional system, and none have examined inmates' optimism and health longitudinally.

Drawing on data from a larger longitudinal study (Tangney, Mashek & Stuewig, 2007), the current paper addresses three areas. First, we examine the concurrent relationship between self-reported physical health and optimism in a sample of 501 county jail inmates in the U.S. It was hypothesized that, as in community samples, optimism would be negatively associated with reported physical health concerns.

Second, we examine whether the number of reported physical health concerns changes over the course of incarceration. Much of the literature regarding inmates' physical health investigates physical health upon entry to the correctional facility, and medical treatment while incarcerated, but does not adequately address changes in inmates' self-reported health concerns over the course of incarceration. Based on the expectation that participants would have access to services, such as medical exams, medication and a regular diet, which may be unavailable in the community for a substantial portion of inmates (Conklin et al., 2000; Staton-Tindall et al., 2007), it was hypothesized that there would be a decline in reported physical health concerns over the period of incarceration. Although inmates face significant stressors, such as separation from loved ones, loss of freedom, and overcrowding while incarcerated, it was expected the benefits from nutritious meals and access to medical services would offset these negatives.

Third, we examine the possibility that optimism upon incarceration may explain some of the changes in physical health concerns observed over the period of incarceration. We hypothesized that the higher the optimism the more likely symptomatology would decline.

Methods

Participants

The sample consisted of 501 male and female inmates at an urban Adult Detention Center who agreed to participate in a large-scale recidivism study (Tangney et al., 2007). The majority, 349 (69.7%), were male and 152 (30.3%) were female. Participants' ages ranged from 18 to 69 ($M = 32$, $SD = 10$). The racial/ethnic background of the participants was 44.8% African American, 35.9% Caucasian, 9.2% Mexican American/Hispanic, 2.8% Asian/Pacific Islander, 7.4% Other/Mixed. The number of days participants were incarcerated ranged from 12 days to 607 days ($M = 160.87$, $SD = 114.04$).

Inmates were eligible to participate if they (1) were arrested on at least one felony charge and held without bond or on total bond of at least \$7,000; (2) were initially assigned to the jail's medium or maximum security "general population" (e.g., not in solitary confinement or forensics), and (3) had sufficient language proficiency to complete study protocols in English or Spanish.

Participants were eligible for a follow-up assessment just prior to release or transfer from the facility (Time 2) if they had been incarcerated for at least 6 weeks. Of the 502 inmates in the study at Time 1, 407 were eligible for the Time 2 assessment. Of those eligible, 267 (65.6%) were re-interviewed at Time 2. Attrition at Time 2 was primarily due to unanticipated transfer to another correctional facility or unanticipated release to the community; 8 individuals refused to be re-interviewed. Of the 267 inmates interviewed at Time 2, 39 (14.6%) participants had missing data on one or more variables used in this analysis due to incomplete protocols. For Time 2 data analysis, complete data were available for 227

participants -- 159 (70.0%) were male and 68 (30.0%) were female. The racial/ethnic background of the Time 2 participants was 46.5% African American, 35.1% Caucasian, 9.2% Mexican American/Hispanic, 1.8% Asian/Pacific Islander, 7.4% Other/Mixed.

Procedures

Shortly after assignment to the general population, eligible inmates were presented with a description of the study and asked to participate, with assurance of the voluntary and confidential nature of the project. In the interest of confidentiality, interviews were conducted in the privacy of the professional visiting rooms in the jail. In addition, the PI obtained a Certificate of Confidentiality from U.S. Department of Health and Human Services to ensure the confidentiality of the data collected. Inmates who agreed to participate and who completed the initial four sessions of interviews received an honorarium of \$15 to \$18¹.

English-speaking participants (95% of the sample) completed computer-based questionnaires using “touch-screen” computers that required minimal familiarity with technology (e.g., no keyboard, no mouse). In addition to presenting questionnaire items visually, the computer read each item aloud to participants via headphones, thus accommodating participants with limited reading proficiency. For participants requiring Spanish versions of the questionnaires (5%), questionnaire responses were gathered via individual interview. Both the interviewer and participant had paper copies of the translated questionnaires. The participant followed along as the interviewer read each question aloud. To approximate the level of privacy afforded by the touch-screen (funding was not available to support programming a Spanish touch-screen) participants filled in their own responses. Participants were reassessed in a similar manner just prior to transfer to another facility or release into the community (Time 2; \$25 honorarium). Participants who missed the Time 2 interview were contacted within two weeks following their release date in order to complete the interview via telephone.

Measures

Optimism was assessed at Time 1 and Time 2 using an abbreviated version of the Values in Action - Inventory of Strengths hope/optimism scale (VIA; Peterson & Seligman, 2001). Due to time constraints, the VIA was abbreviated for this study. To assess optimism, the hope/optimism scale was modified to 4 items. Items that appeared to assess entitlement and superiority, e.g., “I always expect the best,” were dropped from the current scale in order to achieve a measure of dispositional optimism. Items retained were: “I always look on the bright side” “I can always find the positive in what seems negative to others” “Despite challenges, I always remain hopeful about the future” and “If I feel down, I always think about what is good in my life.” Participants responded on a 5-point Likert scale from 1 “not at all like me” to 5 “very much like me.” The revised optimism scale demonstrated a good reliability at Time 1 and Time 2 (see Table 1 for Cronbach’s alphas of measures).

Physical Health was assessed with two self-report measures. Participants completed the Cohen-Hoberman Inventory of Physical Symptoms (CHIPS; Cohen & Hoberman, 1983), a list of 33 commonly experienced physical symptoms that are rated on their presence over the past 2 weeks on a 5-point Likert scale ranging from 0 “not at all bothered” to 4 “extremely bothered.” One item was deleted from the measure due to a clerical error. The final score is calculated as the average of the 32 item ratings. The scale has been shown to have adequate

¹We took great care to ensure that the honorarium was not coercive by working closely with our IRB, correctional staff, and inmates at the facility to become familiar with the jail’s “economy” so that we could establish a fair, but non-coercive honorarium for initial interviews and pre-release interviews.

reliability and validity (Cohen & Hoberman, 1983) and was internally consistent for this sample (see Table 1).

Additionally, participants completed the Personality Assessment Inventory (PAI; Morey, 1991). The PAI is a self-report instrument designed to assess a variety of personality traits as well as symptoms associated with mental illness and personality disorders. The items are rated on a 4-point likert scale (“False,” “Slightly True,” “Mainly True,” and “Very True”). Of specific interest in this paper is the Somatic Complaints scale and its three clinical subscales (Health Concerns, Conversion, and Somatization).

Items on the Health Concerns subscale (e.g. “It’s a struggle for me to get things done with the medical problems I have”) reflect a preoccupation with physical health functioning. Items on the Conversion subscale (e.g. “I’ve had numbness in parts of my body that I can’t explain”) assess physiological symptoms prevalent in conversion disorders. Items on the Somatization subscale (e.g. “I suffer from a lot of pain”) address routine physical complaints such as headaches, back problems or pain. Raw scores were converted to T-scores using the census matched standardization sample (Morey; 1991). The reliability and validity of the PAI has been demonstrated in multiple studies (Edens, Cruise, & Buffington-Vollum, 2001; Morey, 1991).

Results

Concurrent Relationships between Optimism and Physical Health

It was hypothesized that optimism would be inversely related to reports of physical health concerns². As shown in Table 2, optimism was indeed significantly negatively correlated with the total PAI Somatic Complaints Scale, as well as its three subscales, and this was the case at both Time 1 (entry to the jail) and Time 2 (pre-transfer or pre-release). Physical complaints, assessed by the CHIPS, were not significantly related to concurrent assessments of optimism at Time 1, but at Time 2 optimism and CHIPS were significantly negatively related. Overall, results indicate that the higher the optimism, the fewer physical health concerns.

Inmates’ Optimism over the Period of Incarceration: How optimistic are they?

Before examining the relationship between physical health and optimism, analyses were conducted to determine how optimism changed or did not change over time in this sample. Of those who had data at both time points, the mean score for optimism at Time 1 was 3.81 (SD = 0.78) and at Time 2 the mean was 3.77 (SD = 0.75), indicating no significant overall change in level of optimism across the period of incarceration ($t = 1.02, p > .05$). Moreover, individual differences in optimism were moderately stable ($r = .64, p < .001$). In general, the average level of optimism in this sample was mildly elevated, given that a 3 on the Likert scale meant “Neutral” and a 4 meant “Like Me.”

Prevalence of Physical Health Concerns among Jail Inmates

Before examining whether inmates’ physical health concerns diminish over the period of incarceration, we compared the overall level of health concerns in our sample of jail inmates to other non-correctional samples. On the PAI Somatic Complaints scale and its three subscales, participants reported slightly higher mean T-scores (ranging from $M = 50$ to $M = 54$) compared with those observed in Morey’s (1991) college and standardized samples

²Because two measures of physical health concerns (CHIPS and PAI) were utilized in this study, a factor analysis was conducted to determine if the physical health variables were tapping multiple domains. Results indicated the presence of only one factor. However, because researchers often use the CHIPS without the PAI, and vice versa, we present results separately for each scale.

(ranging from $M = 46$ to $M = 50$). Inmates' scores were slightly lower than those observed in Morey's (1991) clinical sample (ranging from $M = 55$ to $M = 58$).

Making comparisons between our sample and other samples using the CHIPS was more difficult. As described above, one question was invalid due to a clerical error. As a result, the CHIPS used in this study had 32, rather than 33 questions. In addition, previous studies vary in the number of questions asked (N of questions range from 32 to 40) and in the time frame used (ranging from "past week" to "past month"). One study was identified as being comparable to our study in number of items and in time frame. The total CHIPS score in one college sample ($M = 0.82$, $SD = 0.59$) (Hale, Hannum & Espelage, 2005) was very similar to the inmates' total score ($M = 0.83$, $SD = 0.66$), although we assessed one fewer item. Pro-rating inmate scores for 33 items, the comparisons remained the same (inmates' transformed CHIPS score increased to 0.86.).

Do Physical Health Concerns Change Over the Period of Incarceration?

To determine if the number of physical health concerns endorsed changed from arrival at the jail (Time 1) to release or transfer (Time 2), paired t -tests were conducted on each variable. As seen in Table 3, there was a statistically significant decrease over time in the level of physical health concerns on 4 out of 5 study measures. Analysis of the CHIPS, indicated that inmates were bothered by fewer physical health concerns upon leaving the jail than upon entry. The PAI total Somatic Complaints scale and two subscales (Conversion and Somatization) also showed a significant decrease between Time 1 and Time 2. No significant difference was observed for the Health Concerns subscale between Time 1 and Time 2. These results indicate that, on average, physical health concerns declined modestly over the period of incarceration.

Another question is whether participants retain their relative rank order over time, as indicated by the correlation between Time 1 and Time 2 measures. As shown in the far right column of Table 3, health concerns were quite stable across time, indicating that inmates who had more health concerns relative to others upon entry to the jail tended to have more concerns relative to others just prior to release. Although physical health concerns appear to decline over the period of incarceration, individual's rank order relative to each other remained quite stable.

Relationship between Time 1 Optimism and Subsequent Changes in Physical Health Concerns

We examined whether optimism at Time 1 predicted a decrease in physical health concerns over the period of incarceration. A series of hierarchical multiple regressions were conducted in which each Time 2 physical health variable was regressed on its corresponding Time 1 physical health variable. Time 1 optimism was then entered into the equation on Step 2, allowing us to determine the main effect of optimism on changes in physical health. Optimism at Time 1 was consistently negatively related to changes in physical health concerns, but only one regression was significant at the .05 level (two others show a marginally significant trend). Individuals higher in optimism at Time 1 reported significantly larger decreases in symptoms of Somatization over time relative to their less optimistic peers (Table 4).

Discussion

In a sample of 501 jail inmates, we examined whether physical health concerns increased or decreased over the period of incarceration, and whether optimism was associated with physical health. Our first hypothesis examined the relationship between physical health and

optimism. Whereas optimism has been widely investigated in the general community, it has been largely ignored in the inmate population. Consistent with studies of community samples, the concurrent relationship between inmates' optimism and physical health concerns was negative.

Given the documented high rates of physical problems in incarcerated populations, it was expected that health concerns would be elevated in this sample. However, inmates in this sample did not report levels of physical health concern significantly higher than community samples. It is possible that inmates in this sample entered the jail in better physical health than other correctional samples. It is also possible that this finding may be due to our assessment of general health concerns as opposed to specific medical conditions. Future research should investigate the differential implications of these types of health measurement.

Our second hypothesis, that there would be a decline in reported physical health concerns during incarceration, was confirmed as participants reported significantly fewer health problems upon release or transfer to another facility, compared to the onset of incarceration. This finding is inconsistent with Maruschak (2006) who found no change in the number of medical problems reported by a nationally representative sample of jail inmates. One possible explanation for this discrepancy is that we assessed general health perceptions, whereas Maruschak (2006) questioned jail inmates about the existence of specific medical problems. It is possible that although an individual may have the same medical problem over the course of incarceration, his or her perception of impairment or day to day symptomology may change.

A strength of this research project is the longitudinal design, thus allowing us to examine the predictive relationship between optimism and changes in self-reported health. Although only one regression equation was statistically significant, results across measures were in a direction consistent with the notion that optimism predicts decreases in physical symptoms over time.

Although results of this study document concurrent and predictive relationships between optimism and physical health, the causal nature of the link is not completely understood as optimism is a complex concept which includes various values and cognitions. One possible pathway for further investigation among offenders is coping style. Research on non-inmates indicates optimists are more likely to productively deal with stressors and major life transitions as a result of engaging in effective and adaptive coping styles (Carver et al., 2002; Scheier et al., 1986). It is unknown whether such effects would generalize to inmates in jail or prison (a very different and greatly constricted environment).

Alternatively, it may be that optimists are more likely to adopt a healthier lifestyle. Results from several studies found a significant positive relationship between optimism and engagement in health-promoting behaviors, such as exercise and good nutrition (Robbins, Spence, & Clark, 1991; Steptoe et al., 1994). By engaging in health-promoting behaviors, optimists may reduce their likelihood of contracting illnesses, increase their overall physical health, and recover more quickly when feeling ill. Future research should investigate the mechanisms by which this change might take place.

There are several limitations to this study. One limitation is that all data analyzed are self-report measures. Therefore, the data are subject to the well-known response distortion and socially desirable responding. Second, pharmaceuticals may influence results as the observed decline in physical health symptoms over the period of incarceration may be a result of receiving medical attention (which is unknown). It would be beneficial to examine

inmate medical records to determine the amount of medical care requested, medical care received, medications prescribed, and medication compliance.

Another limitation is the generalizability of the results as participants were from an urban jail population. It is probable that unique factors exist across various correctional facilities and inmates in rural settings may differ from those in an urban setting. Replication of these results is necessary to determine whether these findings apply to individuals in different types of facilities, such as rural jails, and state or federal prisons.

Findings from this study suggest that inmates' optimism is a valid and informative variable with clinical implications. Given the multiple physical and mental problems often seen in the inmate population, it is important to view incarceration as an opportunity to provide medical care to underserved individuals. Future research can examine appropriate interventions, such as health programs in correctional facilities which could be designed to incorporate optimism raising techniques, such as those using cognitive-behavioral methods.

Incarcerated individuals represent a unique and socially important population to explore the relationship between optimism and physical health as an estimated 95% of prisoners are eventually released into the community (Petersilia, 2003) *with their physical health problems*. In addition, communicable diseases may be transmitted to other inmates, correctional employees and visitors to the facility, all of whom may unknowingly carry the disease into the community (Hammett, Roberts, Kennedy, 2001; National Commission of Correctional Health Care, 2002). Many of the variables previously identified as associated with poor physical health are difficult, if not impossible, to change. Psychological factors, such as optimism offer an opportunity for researchers to explore potential points of intervention. It is important that future research continue to explore the relationship between optimism and physical health in an inmate population.

Acknowledgments

This research was supported by Grant #R01 DA14694 from the National Institute on Drug Abuse awarded to the third author. Many thanks to the numerous members of the Human Emotions Research Lab for their invaluable suggestions and assistance with this research. Finally, we gratefully acknowledge the assistance of inmates who participated in our study.

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Table 1

Descriptive Statistics

Variable	Time	Mean	SD	Number of Items	Possible Range	Observed Range	Cronbach's alpha
Dispositional Optimism	T1	3.85	0.78	4	1-5	1.25-5	0.75
	T2	3.78	0.74	4	1-5	1-5	0.79
Physical Health Concerns							
CHIPS ^a	T1	0.83	0.66	32	0-4	0-3.28	0.94
	T2	0.70	0.59	32	0-4	0-2.78	0.94
PAI ^b							
Somatic Complaints (Total of Subscales)	T1	52.75	10.99	24	39-110	39-102	0.88
	T2	51.03	10.18	24	39-110	39-89	0.89
Health Concerns	T1	50.66	9.98	8	40-97	40-97	0.77
	T2	50.35	9.84	8	40-97	40-92	0.80
Conversion	T1	54.24	12.97	8	43-114	43-114	0.77
	T2	51.82	11.35	8	43-114	43-99	0.81
Somatization	T1	52.48	10.74	8	38-102	38-92	0.65
	T2	50.53	9.42	8	38-102	38-81	0.63

Note: Time 1 N's = 501, Time 2 N = 227

^a Cohen-Hoberman Inventory of Physical Symptoms^b Personality Assessment Inventory

Table 2

Concurrent correlations of optimism and physical health concerns

Physical Health Variable	Optimism	
	Time 1	Time 2
CHIPS	-0.05	-0.17 *
PAI		
Somatic Complaints (Total of Subscales)	-0.25 **	-0.33 **
Health Concerns	-0.22 **	-0.29 **
Conversion	-0.17 **	-0.27 **
Somatization	-0.27 **	-0.32 **

Note: Time 1 N=501, Time 2 N=227

*
 $p < .05$ **
 $p < .01$

Table 3

Changes in Physical Health Concerns over the Period of Incarceration

Variable	Time 1		Time 2		<i>t</i>	<i>r</i>
	M	SD	M	SD		
CHIPS	0.78	0.62	0.70	0.59	2.11*	0.61**
PAI						
Somatic Complaints (Total of Subscales)	52.98	11.36	50.88	10.08	4.32**	0.78**
Health Concerns	50.64	10.38	50.24	9.72	0.78	0.72**
Conversion	55.25	13.16	51.63	11.25	5.50**	0.68**
Somatization	52.21	10.53	50.48	9.38	3.21**	0.68**

*
 $p < .05$.**
 $p < .01$

Table 4

Summary of Step 2 of Hierarchical Multiple Regression Analyses Using Time 1 Optimism to Predict Change in Physical Health from Time 1 to Time 2

Variable	B	SE	Beta	t
CHIPS	-0.05	0.04	-0.07	-1.25
PAI				
Somatic Complaints (Total of Subscales)	-0.10	0.56	-0.08	-1.80 [†]
Health Concerns	-0.65	0.59	-0.05	-1.10
Conversion	-1.19	0.71	-0.08	-1.67 [†]
Somatization	-1.31	0.60	-0.11	-2.18 [*]

[†]
p < .10

^{*}
p < .05