Chapter

ANGER, DEFENSE MECHANISMS, AND INTEGRATIVE SELF-KNOWLEDGE IN IRANIAN CORONARY HEART DISEASE AND CANCER PATIENTS

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ABSTRACT

This study used a self-regulation framework to analyze psychological characteristics of coronary heart disease (CHD) and cancer patients in the previously unexamined cultural context of Iran. Consistent with research conducted elsewhere, Iranian CHD patients reported higher and cancer patients reported lower anger. CHD patients also were higher in anxiety, and cancer patients relied more strongly on the defense mechanisms of rationality, emotional defensiveness, self-sacrifice, and harmonious relations. Suggestions that cancer would predict depression and greater internalized anger received no support in Iran. In conformity with a self-regulation perspective, the Integrative Self Knowledge (ISK) Scale partially mediated relationships of perceived stress with psychological characteristics previously linked with CHD and cancer. CHD patients

also displayed higher perceived stress and lower ISK. Overall, Iranian CHD patients exhibited stronger parallels with previous research, and a self-regulation perspective had a clearer relevance to their psychological functioning. For cancer patients, parallels were more limited and the relevance of self-regulation more complex.

Keywords: Coronary Heart Disease Cancer Iran Anger Integrative Self-Knowledge Self-Regulation

INTRODUCTION

Research by Grossarth-Maticek and Eysenck (e.g., 1990, 1995; Eysenck, 1985) linked coronary heart disease (CHD) with anger, irritation, and emotional expressiveness and cancer with a depressed and emotionally inhibited form of psychological functioning. Relative to evidence linking depression with internalized anger (e.g., Clay, Anderson & Dixon, 1993), the overall implication was that CHD reflects higher and cancer lower levels of expressed anger and emotional reactivity. Psychological defense mechanisms may differentiate the two groups as well with CHD and cancer patients both displaying higher levels of rational repression and emotional denial (Grossarth-Maticek, 1980), but with cancer patients also characterized by a defensive need for harmony (Grossarth-Maticek, Eysenck, & Vetter, 1988; Fernandez-Ballesteros, Zamarron, Ruiz, Sebastian, & Spielberger, 1997). In general terms, these data suggest that CHD and cancer patients experience deficits in self-regulation (Grossarth-Maticek & Eysenck, 1995).

Self-awareness may be central to self-regulation (Baumeister & Vohs, 2004). In early development of this idea, Mullen and Suls (1982) and Suls and Fletcher (1985) argued that self-awareness promotes adjustments in the self-system by allowing a person to compare current functioning with internalized standards of operation. During stress, this process makes it possible for an individual to take corrective actions that bring the self-system back into equilibrium. Empirical support for this model came with their use of the Private Self-Consciousness Scale (Fenigstein, Scheier, & Buss, 1975) to assess self-awareness.

Later studies demonstrated that the Private Self-Consciousness Scale contains two factors with opposite mental health implications (e.g., Watson, Headrick, & McKinney, 1989). An Integrative Self-Knowledge (ISK) Scale records tendencies of the individual to integrate past, present, and desired

future self-experience into a meaningful whole (Ghorbani, Watson, & Hargis, 2008). This scale correlates unambiguously with psychological adjustment (Tahmasb, Ghorbani, & Watson, 2008) and is superior to Private Self-Consciousness in predicting successful efforts to cope with stress (Ghorbani, Cunningham, & Watson, 2010). As a measure relevant to self-regulation, ISK should correlate negatively with perceived stress and should at least partially mediate relationships of perceived stress with the emotional and defense mechanism characteristics that have been associated with CHD and cancer. Evidence that CHD and cancer patients display lower ISK and higher perceived stress would also be consistent with the suggestion that they experience deficits in self-regulation.

In the previously unexamined cultural context of Iran, this study analyzed self-regulation, stress, and the presumed psychological dynamics of CHD and cancer. The expectation was that ISK would correlate negatively with perceived stress and with the emotional and defense mechanism characteristics associated with these two conditions. As a measure of the self-awareness of self-regulation, ISK should also at least partially mediate the positive linkages that presumably exist between perceived stress and measures relevant to the psychological dysfunctions of these two patient groups. Relative to controls, CHD patients should display higher and cancer patients lower levels of expressed anger and emotional reactivity; both CHD and cancer patients should score higher on repression and denial; and cancer patients should exhibit a greater defensive need for harmony.

METHOD

Participants

Participants included 132 CHD patients (31 women, 101 men, M_{age} = 52.7, SD_{age} = 9.5), 135 cancer patients (73 women, 62 men, M_{age} = 40.0, SD_{age} = 10.6), and 100 non-patient controls (40 women, 60 men, M_{age} =31.5, SD_{age} = 9.2). The two patient samples came from relevant inpatient ward populations of Taleghani Hospital in Tehran. Diagnoses of the cancer patients included cancers of the breast, 22.1%; colon, 15.6%; rectum, 2.5%; stomach, 4.1%; lungs, 6.6%; pelvis, 2.5%; uterus, 7.4%; salivary glands, 0.8%; bladder, 0.8%; liver, 2.5%; vagina, 3.3%; brain, 0.8%; nasopharyngeal region, 2.5%; testes, 0.8%; and head and neck, 4.1%; along with lymphoma, 8.2%; sarcoma, 1.6%; mediastinal cancer, 1.6%; leukemia, .8%; and unidentified cancers,

11.4%. Non-patient controls were employees of the privately owned Kish Ware Company in Tehran. All participation in this project was voluntary and in full conformity with institutional ethical guidelines for conducting research.

Measures

Persian versions of all scales appeared in a questionnaire booklet. For measures developed in English, one individual translated scale items into Persian and then another back-translated them into English. Differences between initial and back-translated statements were rare and easily resolved through revisions in the Persian translation. The questionnaire booklet contained scales in the order in which they are reviewed below.

Integrative Self Knowledge (ISK)

Responses to the 12 items of the ISK Scale (Ghorbani et al., 2008) ranged from 0 ("largely untrue") to 4 ("1argely true"). Cronbach's α was .80 (M response per item = 3.23, SD = 0.41). A representative item said, "If I need to, I can reflect about myself and clearly understand the feelings and attitudes behind my past behaviors."

Measures of Anger

Measures relevant to dispositional anger came from the revised version of the State-Trait Anger Expression Inventory (STAXI-2: Spielberger, 1999). Options for all items ranged from 1 ("almost never") to 4 ("almost always"). The Trait Anger Scale (α = .83, M = 2.04, SD = 5.95) contained 10 statements measuring tendencies to experience anger (e.g., "I am quick tempered"). Two Anger Expression and two Anger Control scales included 8 items each. Anger Expression-Out (AX-O: α = .68, M = 1.77, SD = 2.96) measured the aggressive display of anger toward people and objects (e.g., "I do things like slam doors"). Anger Expression-In (AX-I: α =.52, M = 1.91, SD = 2.86) recorded propensities to bottle up or hold anger inside (e.g., "I am angrier than I am willing to admit"). Anger Control-Out (AC-O: α = .87, M = 2.94, SD = 5.53) assesses efforts to *not* express anger toward people or objects (e.g., "I control my behavior"). Anger Control-In (AC-I: α = .85, M = 2.92, SD = 5.20) reflects attempts to control anger by relaxing and calming down ("I try to soothe my angry feelings").

Lifestyle Defense Mechanism Inventory (LDM)

Reactions to items from the Lifestyle Defense Mechanism Inventory (LDM: Spielberger, Lunsford, & Reheiser, 2002) ranged from 1 ("not at all") to 4 ("almost always"). Two measures containing 5 items each assessed rational repression and emotional denial forms of defensiveness. The Rationality Scale (α = .85, M = 3.20, SD = 3.23) included such statements as, "I try to do what is sensible and logical." Representative of the Emotional Defensiveness Scale (α = .74, M = 2.66, SD = 3.48) was the self-report, "I try to understand other people even if I do not like them." Two 5-item scales also assessed a defensive need for harmony. Indicative of Self-Sacrifice (α = .73, M = 3.16, SD = 2.99) was the assertion that "I am willing to make personal sacrifices to maintain smooth relationships with people I care about." "It is very important to me to make my dear ones happy" illustrates Harmonious Relations (α = .76, M = 3.30, SD = 2.99).

Depression and Anxiety Scales

Costello and Comrey (1967) Scales recorded dispositional Depression (α = .89, M = 2.38, SD = 12.07) and Anxiety (α = .81, M = 2.98, SD = 7.83). These instruments employed a Likert scale ranging from 1 ("completely disagree") to 5 ("completely agree"). The Depression Scale included 14 items (e.g., "I feel sad and depressed") with 9 contained in the Anxiety measure (e.g., "I'm a restless and tense person").

Perceived Stress Scale

As with previous American and Iranian samples (e.g., Ghorbani et al., 2008), one item from the Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983) displayed a negative item-to-total correlation and was eliminated, leaving a final measure of 13 items (α = .87, M = 2.76, SD = 9.38). This instrument consisted of a series of questions about stressful experiences (e.g., "In the last month, how often have you felt that you were unable to control the important things in your life?"). Answers ranged from 1 ("never") to 5 ("very often").

Procedure

Non-patient controls responded to the questionnaire booklet in groups of 10 to 20 at the company where they worked. CHD and cancer patients

responded to the questionnaire booklet individually in a hospital bedside situation.

All analysis of relationships among variables controlled for background characteristics of age, sex, marital status, and educational level. Tests of mediation followed the recommendations of Baron and Kenny (1986). Prior to these procedures, a factor analysis examined the possibility of organizing dependent variables into a smaller number of conceptually meaningful groupings.

Control of background variables also occurred in the examination of group differences. In line with the conceptual framework of this project, Perceived Stress as the presumed independent variable was analyzed separately using an Analysis of Covariance (ANCOVA). An ANCOVA then examined group differences in the presumed mediator, Integrative Self-Knowledge. All other variables served as dependent variables in a separate Multivariate Analysis of Covariance (MANCOVA).

RESULTS

Relationships among Measures

In partial correlations controlling for age, sex, marital status, and educational level, Perceived Stress correlated negatively with ISK (-.41, $p < .001$). It also displayed direct associations with Trait Anger (.41), AX-O (.32), AX-I (.23), Depression (.64), and Anxiety (.57) and negative correlations with AC-O (-.38), AC-I (-.37), Rationality (-.30), Emotional Defensiveness (-.26), Harmonious Relations (-.20), and Self-Sacrifice (-.12, $ps < .05$).

ISK displayed statistically significant, but opposite linkages with all of these measures. Specifically, ISK correlated negatively with Trait Anger (-.42), AX-O (-.36), AX-I (-.24), Depression (-.38), and Anxiety (-.42) and positively with AC-O (.39), AC-I (.33), Rationality (.39), Emotional Defensiveness (.18), Harmonious Relations (.20), and Self-Sacrifice (.14, all $ps < .05$).

These patterns of relationship suggested that the dependent variables could be classified into two categories. Measures correlating positively with Perceived Stress and negatively with ISK seemed to measure relative maladjustment with the opposite pattern defining relative adjustment. The vast majority of all correlations within and between these two categories of

instruments were statistically significant and in conformity with this interpretation.

Analysis of Mediation

For the purpose of examining mediation, a principal components analysis with an oblique rotation explored the possibility of reducing all dependent variables into a more manageable number of constructs. Three components accounted for 67.4% of the variance. An Anger-Anxiety Control factor (eigenvalue = 4.49, % variance = 40.8%) was associated with 5 measures that displayed maximal loadings on this first component: Trait Anger (-.78), AX-O (-90), AC-O (.71), AC-I (.47), and Anxiety (-.63). Maximal loadings by 4 measures defined the second Defense Mechanisms factor (eigenvalue = 1.88; % variance = 17.1%): Rationality (.68), Emotional Defensiveness (.55), Harmonious Relations (.86) and Self-Sacrifice (.84). Two measures defined a Depression-Suppressed Anger factor (eigenvalue = 2.00; % variance = 15.4%): Depression (.78) and AX-I (.83). Regression scores for these factors served as dependent variables in the mediation analyses.

All multiple regressions analyzing mediation began with an initial step that controlled for age, sex, marital status, and educational level. In conformity with the requirements for mediation to occur (Baron & Kenny, 1986), the independent variable Perceived Stress did in fact predict the mediator ISK, β = -.48, $p < .001$.

Perceived Stress also proved to be a significant predictor of all three dependent variables: Anger-Anxiety Control (β = -.44, $p < .001$), Defense Mechanisms (β = -.26, $p < .001$), and Depression-Suppressed Anger (β = .57, $p < .001$). Adding ISK to the regression equation produced a significant increase in the variance explained for all three dependent variables, ΔF's (1, 342) $\geq$ 5.28, $p < .05$, with significant ISK associations apparent with Anger-Anxiety Control (β = .31, $p < .001$), Defense Mechanisms (β = .13, $p < .05$), and Depression-Suppressed Anger (β = -.19, $p < .001$). In each instance, Perceived Stress continued to be a reliable predictor after ISK was added to the equation: Anger-Anxiety Control (β = -.29, $p < .001$), Defense Mechanisms (β = -.19, $p < .001$), and Depression-Suppressed Anger (β = .48, $p < .001$). Sobel tests were significant for all three analyses with the absolute value of $z \geq$ 2.23, $p < .05$. In other words, ISK partially mediated the relationship of Perceived Stress with each dependent variable.

Table 1. Means and Standard Error of Means of Dependent Variables for Coronary Heart Disease (CHD), Cancer, and Control Groups after Controlling for Covariates[1]

Variables	CHD	Cancer	Control	F
Trait Anger	$2.36+.056^a$	$1.74+.050^b$	$2.02+.0.75^c$	32.07^{***}
AX-O	$2.23+.048^a$	$1.84+.042^b$	$2.01+.063^c$	17.26^{***}
AX-I	$2.11+.047^a$	$2.11+.053$	$2.13+.063$	0.58
AC-O	$2.62+.065^a$	$3.23+.057^b$	$3.03+.085^c$	21.45^{***}
AC-I	$2.71+.064^a$	$3.12+.057^b$	$2.95+.085^c$	10.92^{***}
Rationality	$3.07+.065^a$	$3.35+.057^b$	$3.12+.086^{a, b}$	4.91^{**}
Emotional Defensiveness	$2.51+.072^a$	$2.79+.063^b$	$2.70+.095^{a, b}$	4.09^{*}
Harmonious Relations	$3.30+.060^{a, b}$	$3.40+.054^b$	$3.13+.080^a$	4.16^{*}
Self-Sacrifice	$3.11+.060^a$	$3.34+.053^b$	$3.01+.080^a$	7.77^{**}
Depression	$2.49+.087$	$2.32+.078$	$2.34+.116$	1.08
Anxiety	$3.39+.082^a$	$2.74+.073^b$	$2.71+.109^b$	17.53^{***}

* $p < .05$ ** $p < .01$ *** $p < .001$.
[1] Different letter superscripts indicate statistically significant contrasts.

Group Contrasts

ANCOVA results revealed significant group differences in the independent variable Perceived Stress, $F (2, 342) = 7.89$, $p < .001$. Cancer Patients displayed an average of $2.60 \pm .063$ ($M \pm SEM$) that did not differ statistically from Controls ($2.63 \pm .095$). CHD Patients ($2.99 \pm .072$) scored higher than both other groups.

Group differences also appeared in the mediator ISK, $F (2, 344) = 5.14$, $p < .01$. CHD patients ($3.06 \pm .067$) displayed a lower score than both the Cancer ($3.53 \pm .059$) and Control ($3.30 \pm .088$) groups, who in turn did not differ.

MANCOVA results revealed statistically significant differences in the dependent variables as well, Wilks' Lambda = .750, $F (22, 664) = 4.67$, $p < .001$. Only data for AX-I and Depression failed to yield significant contrasts. All but 2 of the significant post hoc comparisons used $p < .05$. Comparisons between cancer patients and controls were marginally significant for AC-O ($p = .07$) and AC-I ($p = .09$). These differences are noted on Table 1 because they

were of borderline significance and in conformity with theoretical expectations. With regard to the display of anger, CHD participants scored highest, the cancer group lowest, and controls in between on Trait Anger, AX-O, and AX-I. An opposite pattern appeared for the control of anger with cancer patients highest, the CHD group lowest, and controls in between on AC-O and AC-I. Cancer patients scored higher than one or both other groups on all four defense mechanisms with no significant contrasts between the control and CHD groups on any of these measures. CHD patients were higher than the other two groups on Anxiety.

Clarifying Analysis

In these group contrasts, especially noteworthy was the lower anger and greater use of defense mechanisms in cancer patients. Unpredicted in the correlational results were wide ranging linkages of Defense Mechanisms with adjustment, including the variables that defined Anger-Anxiety Control. Within a self-regulation framework, these data suggested that ISK might help maintain a self-system equilibrium in which Defense Mechanisms promoted Anger-Anxiety Control, a possibility that could have negative implications for the perhaps excessively inhibited anger of cancer patients. Additional multiple regression procedures tested that possibility. For all three groups taken together, the independent variable Defense Mechanisms in fact predicted higher levels of both the mediator ISK ($\beta = .24$, $p < .001$) and the dependent variable Anger-Anxiety Control ($\beta = .27$, $p < .001$). In the prediction of Anger-Anxiety Control, adding ISK to the regression equation increased the variance explained, ΔF (1, 342) = 48.99, $p < .001$, with ISK $\beta = .39$, $p < .001$. In this procedure, ISK reduced but did not eliminate the association of Defense Mechanisms with Anger-Anxiety Control ($\beta = .18$, $p < .001$). A Sobel test revealed a significant effect, $z = 4.18$, p $< .001$. In short, ISK partially mediated the relationship of Defense Mechanisms with Anger-Anxiety Control.

But again, cancer patients in comparison to the other two groups were of particular interest. In group-specific mediation analyses, the independent variable Defense Mechanisms predicted higher levels of the mediator ISK in each group: Cancer, $\beta = .27$, $p < .001$; CHD, $\beta = .16$, $p < .05$; Controls, $\beta = .18$, $p < .001$. Defense Mechanisms also displayed a positive association with the dependent variable Anger-Anxiety Control in the Cancer, $\beta = .32$, $p < .001$; CHD, $\beta = .20$, $p < .05$; and Control, $\beta = .28$, $p < .01$, groups. Adding ISK to

the prediction of Anger-Anxiety Control increased the variance explained (*p*s < .05) for each group: Cancer ISK β = .35, *p* < .001; CHD, ISK β = .37, *p* < .001; Controls, ISK β = .35, *p* < .01. In the Cancer Group, adding ISK reduced but did not eliminate the Defense Mechanism association with Anger-Anxiety Control (β = .22, *p* < .01). In the other two groups, this association became non-significant: CHD, β = .14, *p* = .08; Controls, β = .17, *p* = .10. Sobel tests revealed significant effects for the Cancer and Control Groups, *z* ≥ 2.20, p < .05. The mediation effect for CHD participants was of borderline significance, *z* = 1.82, p = .07. In short, ISK partially mediated the relationship of Defense Mechanisms with Anger-Anxiety Control in the Cancer Group and displayed at least a tendency to fully mediate that association in the other two groups.

CONCLUSION

This investigation used a self-regulation framework to analyze the psychological dynamics of CHD and cancer patients in the previously unexamined cultural context of Iran. Iranian patients displayed both similarities and differences with the research literature. The clearest parallel came with the demonstration that CHD predicted higher and cancer lower levels of anger. This outcome appeared in significant tendencies of CHD patients to score highest on Trait Anger and AX-O and lowest on AC-O, and AC-I, with opposite contrasts evident for cancer patients.

Other results yielded more complex comparisons with previous work. As expected, CHD patients exhibited greater emotional reactivity in their higher Anxiety, but cancer patients were not lower. Cancer patients also did not display a greater Depression, or the suppressed anger (AX-I) that apparently goes along with it. In Iran, therefore, either cancer was not associated with tendencies toward depression that have been reported elsewhere (Grossarth-Maticek & Eysenck, 1990, 1995), or the Depression and AX-I instruments were ineffective in measuring the relevant expressions of these processes in Iran. Indeed, AX-I did exhibit a relatively lower internal reliability, suggesting possibly important psychometric inadequacies.

Additional complexities appeared with the defense mechanism data. Rationality, Emotional Defensiveness, Self-Sacrifice, and Harmonious Relations all displayed a pattern of relationships suggesting that they recorded adjustment. In retrospect, this unpredicted outcome was perhaps unsurprising. An effective defense mechanism presumably just would produce positive psychological consequences at a conscious level. In addition, CHD patients

did not display the expected higher levels of Rationality and Emotional Defensiveness, perhaps revealing another Iranian difference. On the other hand, previous demonstrations of a CHD linkage with repression and denial have been challenged because they may rest upon indirect and procedurally problematic measures of these defense mechanisms (e.g., Spielberger et al., 2002). The present LDM data may, therefore, reflect a more accurate assessment of the possibility. Finally, these results confirmed that cancer would be associated with a stronger use of all four defense mechanisms. Clearest evidence of this effect appeared with Self-Sacrifice which was higher in cancer patients than in both other groups. For Rationality, Emotional Defensiveness, and Harmonious Relations, cancer patients were significantly higher than only one or the other group.

Results revealed that a self-regulation perspective emphasizing self-awareness could be useful in clarify psychological processes previously associated with CHD and cancer. As hypothesized, ISK displayed a negative relationship with Perceived Stress. Perceived Stress also correlated positively and ISK negatively with the apparent adjustment of Anger-Anxiety Control and Defense Mechanisms, and opposite relationships appeared with the maladjustment of Depression-Suppressed Anger, a factor replicating the connection between these two psychological processes in Iran (Clay et al., 1993). Especially noteworthy were further findings that ISK partially mediated relationships of Perceived Stress with Anger-Anxiety Control, Defense Mechanisms, and Depression-Suppressed Anger. These mediation effects suggested that the self-awareness of ISK was an influential self-regulation process that helped reduce the negative impact of stress.

Overall, these data offered clearest support for use of a self-regulation perspective to understand CHD patients. Possible deficits in self-regulation appeared in their elevated Perceived Stress and lower ISK. Mediation effects also pointed toward ISK as a potentially beneficial process in at least partially ameliorating stress-related deficits in the Anger-Anxiety Control that importantly defined CHD. The implication, therefore, was that CHD patients might receive at least some benefits from a therapeutic development of their ISK. Therapeutic enhancement of other forms of self-awareness might be important as well because mindfulness of on-going self-experience supplements ISK in reducing stress (Ghorbani et al., 2010).

Understanding Iranian cancer patients in terms of self-regulation seemed less straightforward. Cancer patients failed to differ from controls in either Perceived Stress or ISK. Cancer patients did display significantly lower Trait Anger and AX-O and higher anger control. If research can clearly identify

these contrasts as one among undoubtedly many important factors in the causes or consequences of cancer, then other data suggested that self-regulation could still be a clinically noteworthy, though complex issue. In analyses of all three groups taken together, cancer patients scored higher on the four defense mechanisms, the Defense Mechanisms factor predicted a greater Anger-Anxiety Control that included tendencies that were especially strong in cancer patients, and ISK partially mediated the relationship of Defense Mechanisms with Anger-Anxiety Control. The suggestion, therefore, was that the cancer self-system might maintain a maladaptive equilibrium in which ISK helped mediate the ability of Defense Mechanisms to promote a perhaps excessive Anger-Anxiety Control.

However, group-specific mediation analyses suggested another possibility. ISK was not as effective in accounting for the Defense Mechanisms relationship with Anger-Anxiety Control in cancer patient. Probably not too much should be made in absolute terms of the ISK tendency to fully mediate this association in the CHD and Control Groups. A more powerful test with larger CHD and Control groups could uncover partial rather than full mediation effects. Still, the Cancer Group contrast of partial rather than full mediation was perhaps revealing in relative terms. After ISK was entered into the regression equation, at least some of the remaining Defense Mechanisms linkage with Anger-Anxiety Control could have reflected a more truly "defensive" effect, given that the Anger-Anxiety Control of cancer patients was perhaps extreme. If research confirms such a possibility, then the therapeutic response presumably would be to promote even greater ISK and other forms of self-awareness. Specifically, it might be important to specify how and when diminished levels of anger prove to be problematic for cancer patients and then to expand self-awareness of those circumstances in order to adjust the self-system to a healthier equilibrium.

This project offered a useful preliminary sketch of the psychological dynamics of CHD and cancer in Iran. Additional investigations with larger samples are clearly needed to confirm and extend the present observations. In addition, the CHD, Cancer, and Control groups were not identical in their background characteristics. Statistical procedures attempted to control for these differences, but a more ideal future design would match group participants in terms of potentially important background factors.

In summary, this project used a self-regulation framework to examine the psychological functioning of CHD and cancer patients in Iran. Data for CHD patients displayed the clearest parallels with studies conducted elsewhere and also indicated that issues related to self-regulation could be useful in clarifying

and therapeutically addressing their psychological functioning. Cancer patients presented a more complex picture. They did not display greater evidence of depression as would have been expected based upon previous research. Their lower anger and greater anger control along with higher levels of Rationality, Emotional Defensiveness, Self-Sacrifice, and Harmonious Relations also pointed toward the possibility of a self-system that maintained an unhealthy form of equilibrium. At least in Iran, future studies will need to determine if and when the lower anger of cancer patients has negative health implications and how their self-awareness might need to be modified to produce therapeutic effects.

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