Pergamon

0191-8869(94)00131-6

Person. individ. Diff. Vol. 18, No. 1, pp. 39–46, 1995

0191-8869/95 $9.50 + 0.00

COMPARING DIFFERENTIATION AND INTEGRATION WITHIN PERSONAL GOAL SYSTEMS

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(Received 4 May 1994)

Summary—Concepts of differentiation and integration were examined using the "personal striving" goal construct (Emmons, 1986, 1989). Goal differentiation was defined in two ways: (a) as how dissimilar subjects rated their strivings as being (Emmons & King, 1989), and (b) as the amount of non-overlapping variance in subjects' evaluative assessments of their strivings (Donahue, Robins, Roberts & John, 1993). Goal integration was measured as the extent to which subjects saw their strivings as helping them move towards desired "possible selves" (Markus & Nurius, 1987). Self-rated and statistically-derived differentiation measures were positively correlated with each other, and both variables were negatively correlated with integration. Also, more differentiated subjects tended to feel less successful in their strivings, whereas integrated subjects felt more successful in and more committed to their strivings. Discussion suggests that the differentiative and integrative aspects of complexity should be kept conceptually distinct.

INTRODUCTION

Werner's orthogenetic principle (1957) states that the development of complexity within a hierarchically-ordered system occurs through two somewhat distinct processes: differentiation and integration. Systems are differentiated to the extent that, at a given level of the system, elements are dissimilar to each other or function independently of each other. In contrast, systems are hierarchically integrated to the extent that lower-level elements share common connections to higher levels of the system (Crockett, 1965; Miller, 1978; Werner, 1957). This model implies that differentiative and integrative tendencies may, to some extent, *oppose* one another. That is, differentiative processes may lead towards diffusion and fragmentation within a system, causing difficulties for the differentiated person, and making integration harder to achieve. In contrast, integrative processes may lead towards greater unity and functional cohesion within systems. These two suppositions are considered below, in terms of personal goal-systems.

Disadvantages of goal-differentiation

A behavioral-economic analysis suggests one reason why goal-differentiation may be problematic. Wilensky (1983) notes that favorable relationships between goals ensue when "the goals or their plans are similar enough so that a plan for both goals is more efficient than the plans for each goal considered separately" (Wilensky, 1983; p. 53). For example, the goals of "getting out of the house", "developing a new career" and "finding a way to occupy my time" are similar enough that all may be approached with the same plan, "find a job". In contrast, a person with the dissimilar goals of "finding ways to make more money", "finding time to practice my music", and "cultivating a unique personal appearance" may struggle in trying to satisfy this set of goals simultaneously, because the goals are likely to have fewer favorable relationships. Because unrelated goals are likely to put more of a strain on limited resources such as time, energy, or money, differentiated people are likely to make slower and less efficient progress, overall, towards their goals (Schonpflug, 1985).

Research by Donahue, Robins, Roberts and John (1993) suggests a second reason why goal-differentiation may be problematic. Donahue *et al.* found that people who think very differently about their role-identities (i.e., those high in "self-concept differentiation") were lower on both self-report and observer-based measures of well-being. They interpreted these results with a "fragmentation" model, in which differentiation is negative because it represents a lack of integration and cohesion within the self-concept. The role-differentiation model and findings of Donahue *et al.* (1993) thus support the contention that differentiative and integrative processes may oppose one

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another. Part of the purpose of the present research was to find out if people who rate *goals* very distinctively might also suffer from a lack of cohesion within their "self-theory" (Epstein, 1973; Harter & Monsour, 1992).

Advantages of hierarchical integration: top-down regulation

Studies of complex problem-solving show that when goals are hierarchically linked under unifying schemata, problem-solvers can more easily hold different goals in mind as they make plans (Reither, 1981; Reither & Staudel, 1985). Thus, subordinate goals can be more sensitively weighted and prioritized in terms of their importance to overarching goals, and the person can create more complex and comprehensive simulations of possible action sequences (Nuttin, 1984; Markus & Ruvolo, 1989). Accordingly, integrated problem-solvers are enabled to choose plans which favorably relate many goals and negatively impact few goals (Wilensky, 1983). Furthermore, hierarchically integrated people may be in a better position to regulate ongoing action after a behavioral strategy has been adopted (Dorner, 1980). In sum, a person with an overarching goal may be better able to find ways to balance the competing needs of different lower-level goals, and even use them to one another's advantage.

Assessing personal goal-systems

To investigate these suppositions we employed two existing personal goal constructs. "Personal strivings" (Emmons, 1986, 1989) are what people are characteristically trying to do in the course of their everyday behavior, and may thus be viewed as "principle"-level goals (Emmons, 1989) within a control hierarchy (Carver & Scheier, 1981; Powers, 1973). "Cultivate a unique personal appearance", "find time to practice my music" and "find ways to make more money" are all examples of personal strivings. In a subsidiary role, we also employed the "possible self" construct (Markus & Nurius, 1987; Markus & Ruvolo, 1989). Possible selves are images of oneself in the future, which have motivating qualities. They may be conceived of as higher, "system"-level goals (Hyland, 1988; Read & Miller, 1989) within a control hierarchy (Carver & Scheier, 1981; Powers, 1973). Although personal strivings and possible selves may have similar content (i.e., one may strive to "become independent" or have a possible self of "me as independent"), we argue that there is an important difference between the two constructs. Strivings are what people find themselves trying to do in their daily behavior, and to some extent, may be thought of as behavioral traits stated in intentional terms. In contrast possible selves are representations of desired future states, which are not necessarily being acted upon.

Goal-differentiation. To operationalize the two concepts of differentiation discussed above, we assessed (a) how dissimilar subjects rate their strivings as being (following Emmons & King, 1989), and (b) how distinctively subjects evaluate their strivings (following Donahue *et al.*, 1993). The first measure solicits direct self-reports regarding striving dissimilarity, and defines differentiation as the mean of subjects' pairwise dissimilarity ratings. Notably, this self-report format provides no guarantee that goals rated as dissimilar are different in any "veridical" sense. In contrast the second measure defines differentiation in terms of the implicit variability with which subjects rate their strivings across a set of evaluative dimensions. Thus, this method offers a more cognitive-structural measure of differentiation, which does not rely on subjects' direct self reports of dissimilarity. To find converging results for these two differentiation measures would strengthen the case for the hypotheses being tested herein.

Goal-integration. Guided by the orthogenetic principle (Werner, 1957) and by control-theory conceptions of self-regulation (Carver & Scheier, 1981, 1982), we operationalized hierarchical integration as the extent to which personal strivings are helpfully linked to desired possible selves. For example, a person who typically strives to cultivate a unique personal appearance, find time to practice music, and find ways to make more money would be considered integrated to the extent that he has possible selves (such as "rock star") which are helped by these strivings, and unintegrated to the extent that he has possible selves (such as "social worker") which are not helped by these strivings.

Comparing differentiation and integration. We expected that the two measures of differentiation would be negatively correlated with integration, because we reasoned that dissimilar goals should be harder to unify under overarching objectives. For example, a person with the dissimilar goals of "finding ways of making more money", "finding time to practice my music" and "cultivating

a unique personal appearance" should have a more difficult time integrating them than a person with the similar goals of "getting out of the house", "developing a new career", and "finding a way to occupy my time".

In order to compare goal differentiation and integration in their relation to functional outcomes, we asked subjects how difficult their strivings are, how well strivings have been attained in the past, how much current progress is being made in strivings, and how committed subjects feel to their strivings (Emmons, 1986). Because we assumed that a set of dissimilar goals is more difficult to attain than a set of similar goals (Wilensky, 1983), we expected that differentiated subjects would rate themselves as making less current progress in and having less past attainment in their strivings, and would rate their strivings as being more difficult. In addition, we thought they would indicate less overall commitment to their strivings because dissimilar strivings, which are less likely to be interdependent with one another, should on average be less important to the person. In contrast, in accordance with the notion that integration enhances functional coherence, we expected that the integration measure would be *positively* correlated with current progress, past attainment, and commitment, and negatively related to difficulty.

Differentiation, integration, and self-consciousness

Finally, we compared goal differentiation and integration in relation to dispositional self-awareness. Seeman (1983) summed up 25 years of work on personality integration with the observation that integrated people can "listen to their own signals" (p. 233). This observation accords with the control-theory proposal that self-attention is vital to effective self-regulation (Carver & Scheier, 1981, 1982). Thus we expected that striving integration would be positively related to private self-consciousness (Fenigstein, Scheier & Buss, 1975), whereas the two striving differentiation measures would be unrelated to private self-consciousness. Such a finding would help further distinguish integration and differentiation.

METHOD

Subjects and procedure

Subjects were 45 undergraduates (17 males and 28 females) enrolled in psychology classes at the University of California, Davis. They completed the assessment materials in groups during two evening sessions held one week apart, and received extra credit in their psychology classes for participating.

Measures

Personal strivings. During the first session, each subject generated a list of at least ten "personal strivings" (Emmons, 1986, 1989), which were described as "objectives that you are typically trying to accomplish or attain in your everyday behavior". Subjects gave a mean of 12.2 strivings.

Subjects then selected the 10 strivings which they felt best described them, and appraised them as to (a) how committed they feel to each striving; (b) how much they have attained success in each striving in the past; (c) how much progress they are currently making in each striving; and (d) how difficult each striving is for them. Emmons (1986) reported adequate test-retest reliability for these four striving scales, and also showed that progress, past attainment, and commitment were significant predictors of subjective well-being. Following Emmons' procedures, commitment and difficulty were assessed using a 6-point scale; current progress via a 7-point scale; and past attainment with a 9-point scale. Scores for each dimension were computed by summing the subject's ratings for that dimension across all ten strivings. Means, standard deviations, and alpha coefficients for these scales were as follows: *Current progress*, M = 45.4, sd = 7.0, alpha = 0.67; *Past attainment*, M = 59.4, sd = 13.5, alpha = 0.82; *Commitment*, M = 33.9, sd = 6.9, alpha = 0.81; and *Difficulty*, M = 27.7, sd = 6.7, alpha = 0.67.

Measuring goal-differentiation. Subjects were then asked to complete a 10×10 triangular grid in which they rated every possible pairing of strivings as to how similar or dissimilar the two strivings are, using a scale ranging from 1 (very similar) to 9 (very different). For example, the two strivings "cultivate a unique personal appearance" and "find ways to make more money" would likely be rated as quite different. The resulting 45 ratings were averaged in order to create a global index of *self-rated*

goal differentiation for each subject (for more discussion of this measure, see Emmons & King, 1989). Mean, standard deviation, and alpha for this scale were 4.84, 1.15, and 0.87, respectively. As a final first-session task, subjects completed the private self-consciousness scale (Fenigstein *et al.*, 1975).

To arrive at the second measure of differentiation, the data were first reformatted such that strivings were the unit of analysis, rather than persons. For each subject, a correlation matrix between his or her 10 strivings was computed by submitting ratings on the four assessment dimensions of difficulty, past attainment, current progress, and commitment to the SPSSX Proximities procedure (SPSSX User's Guide, 1988). This matrix was then subjected to principal components analysis. Resultingly, *statistically-derived goal differentiation* was defined as the percentage of variance *not* accounted for by the first principal component. This figure was carried forward for use in between-subject analyses (M = 47%, sd = 23). This method represents a direct application of Donahue *et al.*'s (1993) computational procedure, except that it was applied to ratings of goals, not roles.

Possible selves. Because of our assumption that personal strivings and possible selves are distinct constructs locatable at different levels of personal goal hierarchies, we wished to measure them as independently as possible. To reduce the risk that subjects would confuse the two units, we allowed a week to elapse between striving tasks and possible self-based tasks. To further ensure independence between the two units, we gave subjects a long list of possible selves to choose from, rather than having them generate selves which might be overly influenced by the strivings they had already reported. Accordingly, during the second session subjects completed a "possible self" questionnaire (Markus, 1987) consisting of 131 items culled from selves spontaneously generated by college-age subjects in prior studies by Markus and colleagues. As an example, the first 10 selves on this list were: good-looking, likable, media personality, sexy, overweight, in touch with my feelings, homemaker, motivated, respected, and lawyer. Thus the possible selves ranged from global trait descriptors to specific occupational roles, and included both positive (e.g., "sexy") and negative (e.g., "overweight") items. Subjects first indicated, for each possible self, whether it is one they imagine for themselves. If so, they rated how often they think of it. Subjects endorsed a mean of 67.6 of the items as being possible selves for them, with a standard deviation of 16.0.

Measuring goal-integration. Next, subjects selected the 10 possible selves which they think about most often, and wrote them across the top of a piece of horizontal, legal-sized paper. They were then provided with the strivings they had given the previous week, which they were instructed to write across the bottom of the paper. Subjects proceeded to consider the effect each striving has on each possible self. When they perceived a relationship, subjects drew a line linking the striving to the possible self: where no relationship was perceived, no line was drawn. When a striving was perceived as strongly negatively impacting a possible self, subjects assigned the line a rating of "−2". Moderate negative impacts received a "−1" ratings; moderately helpful impacts received a "+1" rating, and strong helpful relationships received a "+2" rating. Ratings made with regard to clearly negative possible selves (such as "overweight" and "assault victim") were recoded, so that all connections would refer to positive possible selves.

In order to derive an index of the overall extent to which strivings are integral to desired possible selves, we summed all ratings (M = 28.8, sd = 13.4). This procedure is similar to that used by Emmons and King (1988) to investigate conflict between personal strivings, except that it codes the data positively, addresses striving/possible self pairs instead of striving/striving pairs, and subjects indicate non-relationships by not drawing a line, rather than by giving a "0" rating.

RESULTS

There were no sex differences for the differentiation and integration measures, so the analyses reported below collapse across sex. The self-rated and statistically-derived differentiation measures were significantly correlated ($r = 0.31$, $p < 0.05$), offering some convergent validation for each other. The supposition that increasing differentiation makes integration more difficult to achieve was supported by the negative correlation of striving integration with both self-rated differentiation ($r = -0.46$, $p < 0.01$) and statistically-derived differentiation ($r = -0.37$, $p < 0.01$).

Table 1 presents the intercorrelations of the four striving assessment dimensions. Consistent with the results reported by Emmons (1986), difficulty was negatively related to current progress and past

Table 1. Intercorrelations of the four striving assessment dimensions

	1	2	3	4
Current progress	—			
Past attainment	0.69	—		
Commitment	0.37	0.36	—	
Difficulty	−0.54	−0.36	−0.33	—

Note. All $p < 0.01$.

attainment, and also negatively correlated with commitment. Current progress was positively correlated with past attainment, and both of these dimensions were positively correlated with striving commitment. In short, people who are more committed to their strivings feel that they are less difficult, and feel that their striving efforts are going better; and, people who perceive their strivings as more difficult do not feel that their efforts are going as well.

Table 2 presents the correlations of the three complexity measures with the four striving assessment dimensions. Self-rated differentiation was significantly negatively correlated with past attainment, and marginally significantly negatively correlated with current progress and commitment. It was also positively but not significantly correlated with striving difficulty ($p = 0.11$). Statistically-derived differentiation was strongly negatively correlated with past attainment and current progress, positively correlated with striving difficulty, and unrelated to commitment. Parenthetically, although in the latter analyses the same striving assessment ratings were used to compute both "predictor" and "outcome" variables, the potential for confound is minimal; the statistically-derived differentiation measure indexes variability between strivings, and thus should be largely independent of the outcome measures, which index mean levels across strivings.

In contrast, the goal integration measure was *beneficially* related to the striving assessment dimensions. Subjects who reported more helpful connections between strivings and possible selves also rated themselves as making significantly more current progress in strivings, as having more past attainment in their strivings, and as being more committed to those strivings. They also rated strivings as being marginally less difficult.

Finally, as predicted, integration was positively correlated with private self-consciousness ($r = 0.30$, $p < 0.05$). Private self-consciousness was related to neither self-rated ($r = -0.15$, ns) nor statistically-derived differentiation ($r = -0.02$, ns).

DISCUSSION

These results are consistent with the idea that differentiation and integration may tend to oppose or counteract one another. Subjects with differentiated goals, as defined by two different measures, were less goal-integrated. In addition, differentiated subjects tended to report less success in strivings, while integrated subjects reported more success in and more commitment to strivings. The intercorrelation of the two differentiation measures, and their convergent relationships to integration and to functional outcomes, provide some assurance regarding the reliability of these phenomena. We suggest, in accordance with both behavioral-economic (Wilensky, 1983; Schonpflug, 1985) and self-fragmentation (Donahue *et al.*, 1993) views of differentiation, that strivings are more difficult to coordinate effectively if they are very different from one another. In contrast, according with research

Table 2. Correlations of differentiation and integration measures with the four striving assessment dimensions

	Self-rated goal differentiation	Statistically-derived goal differentiation	Goal integration
Current progress	−0.22 +	−0.57**	0.49**
Past attainment	−0.30*	−0.71**	0.39**
Commitment	−0.20 +	−0.08	0.30*
Difficulty	0.19	0.41**	−0.21 −

Note. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

on complex problem-solving (Dorner, 1980), strivings may be easier to coordinate if they are consistent with and/or regulated by broader future goals (i.e., "possible selves").

The problematic nature of differentiation in this study may seem puzzling in the light of some past research. Differentiation has been conceptualized as one aspect of complexity (Crockett, 1965; Emmons & King, 1989; Niedenthal, Sutterland & Wherry, 1992), and complexity is generally considered to be desirable (Dixon & Baumeister, 1991; Linville, 1985, 1987). For example, Linville (1985, 1987) found that undifferentiated people may suffer for having "too many eggs in one basket", i.e., they do not have enough distinct self-roles with which to buffer themselves from negative experiences within particular roles. Why has differentiation been found to be beneficial in self-complexity research, and not so desirable in this study and the Donahue *et al.* (1993) study?

First, it should be noted that self-complexity measures and theory have not been directly applied herein. We refer to this literature only in order to offer some general speculations about the nature of differentiation and integration. As a second caveat, the type of differentiation measured by self-complexity researchers does appear to have some costs (Dixon & Baumeister, 1991). Maintaining multiple distinct self-aspects can be difficult or stressful, "perhaps because of role conflicts or multiple demands upon time or attention" (Linville, 1987; p. 672). This idea concurs with our behavioral-economic argument that goal differentiation is problematic because distinctive goals are likely to have fewer favorable relationships with each other. Nevertheless, the fact remains that the self-complexity measure has on the whole been shown to bear a positive relationship to mental health outcomes, whereas ours and the Donahue *et al.* (1993) measures of differentiation appear to be negatively related to such measures. Again, why the discrepancy?

One possible explanation is that the trait-sorting task used to measure self-complexity (Linville, 1985, 1987) may assess the integrative as well as the differentiative aspect of complexity. Linville's open-ended methodology asks subjects to identify and report on as many self-roles as they can. We suggest that the ability to achieve on-the-spot access to many different selves may require substantial self-awareness and self-integration, perhaps partly accounting for the measure's beneficial effects. To illustrate this point, consider the buffering mechanism by which role-differentiated people are said to prevent "spillover" of negative affect from one role to another (Linville, 1987). This buffering strategy might be seen as operative, in an extreme form, in persons suffering from dissociative or multiple personality disorders. That is, in order to prevent affective spillover, such persons not only "switch" selves; they also tend to *lose all access* to alternate selves. Although people with such disorders may be extremely differentiated, they are also extremely unintegrated (i.e., their different parts are not accessible from within a unified whole). In contrast, the ability to identify multiple self-aspects, which is called for by Linville's (1987) card-sorting task, does imply substantial integrative contact with the "whole self". This idea, if correct, implies that in order to measure cognitive differentiation more cleanly it may be necessary to fix the number of elements which subjects rate, as do the Donahue *et al.* (1993) and Emmons and King (1989) methods.

The Donahue *et al.* (1993) discussion highlights a second way in which integration and differentiation might be inadvertently confounded. As noted in the introduction, these researchers' ideas imply that integration and differentiation are two extremes of a single continuum. However, we believe that they should not be defined as polar opposites on the same scale. As an example of the problems that might otherwise result, the Donahue *et al.* (1993) index of self-concept differentiation, if reciprocalized to create a measure of integration, would define very integrated people as those who rate all self-elements almost exactly the same. Similarly, our index of self-rated goal differentiation, reciprocalized, would define the most integrated person as one who sees his or her strivings as being nearly identical. Rather than blending differentiation and integration (as the self-complexity measure may do), this measurement practice might confuse integration with *lack* of differentiation.

One final question is worth touching on. How do differentiation and integration develop? It may be that increasing differentiation usually drives the cycle, given that differentiation may be seen as a prerequisite for integration (Suedfield & Bluck, 1993). That is, integrative processes may be enacted in order to solve the problems posed by increasing differentiation. However, in accordance with the complex problem-solving research cited above, we suggest that the overall functional coherence of a goal-system is likely to be maximal in the case of top-down regulation (Carver & Scheier, 1981), when the development of differentiation is driven and controlled by higher-level purposes. For example, consider the person who starts with the possible self of "me as a rock star", and no clear

ways of moving towards it. If this person then develops the strivings "find time to practice music", and "cultivate a unique personal appearance" in order to help him/her approach the rock star possible self, then these dissimilar strivings may ultimately combine to help enhance the person's achievement and well-being. Without such an integrative schema, however, the highly goal-differentiated person may have "too many irons in the fire". Unfortunately, the goal integration measure used herein cannot distinguish between a state of active top-down regulation of strivings by possible selves, and a state of mere consistency between strivings and possible selves.

In sum, our results suggest that it may be profitable to maintain a conceptual distinction between differentiation and integration (as in Crockett, 1965; Epstein, 1973; Miller, 1978; and Werner, 1957). It should be noted, however, that the current findings are only correlational, and are based on a relatively small sample of college students. Thus, further work is needed to replicate and extend these results. In particular, future research could elaborate upon the causal links and developmental sequelae between goal differentiation, integration, and well-being, and could also explore the relationship of these constructs to other conceptions of cognitive and self-complexity (cf. Linville, 1987; Harter & Monsour, 1992; Suedfield & Bluck, 1993; Tetlock, Peterson & Berry, 1993).

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