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Whose self is it anyway? Self-aspect control moderates the relation between self-complexity and well-being☆

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Abstract

Greater self-complexity refers to the extent that one's self-concept is comprised of many and relatively differentiated self-aspects. Although some research has found that those greater in self-complexity fare better physically (e.g., fewer illnesses) and psychologically (e.g., less depression) when experiencing stress, other studies have reported another pattern of data (e.g., greater self-complexity predicts greater depression). In the current work, two studies found support for a moderating variable in this latter pattern, self-aspect control. Specifically, for those who perceived relatively little control over their self-aspects, being greater in self-complexity predicted worse physical and psychological outcomes. Study 2 tested alternative explanations and supported an interpretation that perceptions of control over one's multiple selves, in particular, moderated the relation between self-complexity and well-being.

The study of the self in social psychology has evolved both conceptually and empirically during the past few decades. Originally, the self was often conceptualized as a relatively unitary structure (e.g., Allport, 1955; Rogers, 1951), but more recent treatments have concluded that the self is better conceived as multifaceted and context-dependent (Baumeister, 1998; Linville & Carlston, 1994). This orientation has led psychologists to identify ways to assess this multifaceted self-representation and to study its consequences. The current work explored how the cognitive representation of multiple selves relates to well-being and how perceived control over those selves moderates this relation.

One useful approach to examining both the representation and the implications of multiple selves is self-complexity. Greater self-complexity refers to the degree to which one's self-concept is comprised of many and relatively nonredundant self-aspects. These self-aspects can refer to important and meaningful roles (e.g., professor), relationships (e.g., son), behaviors (e.g., roller-coaster fanatic), or situations (e.g., feeling playful). As one identifies more self-aspects and perceives that relatively unique qualities characterize each of those self-aspects, one is greater in self-complexity. Not only has research on self-complexity acknowledged and examined the context-dependent nature of these self-aspects (e.g., Linville, 1985; Niedenthal, Setterlund, & Wherry, 1992) but it has also sought to understand how the structure of self-concept representation mediates physical and psychological responses to life events (Rafaeli-Mor & Steinberg, 2002).

Self-complexity is typically assessed by a trait sorting task in which respondents put traits into groups

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that represent meaningful aspects of their lives (Linville, 1985). The instructions are open-ended, encouraging respondents to represent their self-aspects (each group they produce) and the qualities that are self-descriptive of them in each self-aspect (the traits) in their own idiosyncratic fashion. For example, one might put "competitive," "intelligent," and "anxious" in one group and label it as "my student self." Based on these trait sorts, a self-complexity score is calculated that captures both the number of self-aspects generated and the degree to which the traits ascribed to each self-aspect are not redundant with traits associated with other self-aspects (for extensive details, see Linville, 1987; Woolfolk, Novalany, Gara, Allen, & Polino, 1995).

In an initial demonstration of the implications of self-complexity, Linville (1985) found that self-complexity moderated affective responses to receiving self-relevant feedback. Linville asked participants to complete a self-complexity trait sort task and later provided them with feedback suggesting that they either performed very well or performed very poorly on an intelligence test. Because the participants were college students, this feedback should have important implications for their student self-aspect. Mood measures were collected prior to their receiving this feedback and immediately after receiving it. It was found that those with lower self-complexity experienced greater mood swings following the feedback (i.e., greater positive mood when told they performed well on the test, greater negative mood when told they performed poorly on the test) than did those greater in self-complexity.

These findings provided initial support for a self-complexity *spillover effect*. Because those lower in self-complexity had relatively fewer self-aspects and had self-aspects comprised of more redundant traits, self-relevant feedback should have a greater impact on their overall sense of self. In particular, having relatively fewer self-aspects allowed for a larger proportion of the self to be implicated when feedback about one self-aspect was received. In addition, having fewer self-aspects that share a relatively greater number of redundant features allowed the feedback to implicate other self-aspects that shared features with their student self. Thus, those greater in self-complexity were less affected by the feedback because the structure of their self-concept mitigated the potential for affective spillover to occur.

Other work has provided further evidence for self-complexity spillover effects. In a study examining the suppression of self-relevant thoughts, Renaud and McConnell (2002) replicated the Linville (1985) finding that those lower in self-complexity experienced stronger affective responses (e.g., less positive mood, lower self-esteem) following negative feedback about their student self than did those greater in self-complexity. They also found that those lower in self-complexity had greater difficulty in suppressing thoughts associated with negative feedback about their student self when attempting to distract themselves with other aspects of their lives than did those greater in self-complexity. Presumably, this was because those lower in self-complexity were more likely to return to thoughts of their student self-aspect because of stronger associations among their self-aspects. In another study that examined the implications of spillover, Dixon and Baumeister (1991) found that those lower in self-complexity (relative to those greater in self-complexity) escaped from a state of heightened self-awareness faster following negative self-relevant feedback, presumably because of the affective amplification of spillover effects.

The implications of self-complexity for social functioning appear to extend beyond affective responses resulting from spillover. Linville (1987) found that self-complexity had implications for understanding how people respond to on-going, stressful periods in their lives. In one experiment, Linville collected measures of self-complexity, life stressors, and psychological and physical outcomes associated with the consequences of experiencing stress (e.g., stress-related illnesses, depression) during an initial experimental session, and then collected the same outcome measures two weeks later in a follow-up session. Consistent with a *buffering hypothesis*, Linville found a self-complexity by stress interaction in predicting the follow-up outcomes. Specifically, those who reported greater stress-related outcomes (e.g., greater depression, more stress-related physical symptoms, and illnesses) during the follow-up session were those who reported more negative events in their lives and less self-complexity. When experiencing stressful events, those greater in self-complexity appeared to fare better than those lower in self-complexity presumably because the stressful events only affected relevant self-aspects rather than spilling over to other self-aspects.

A recent meta-analysis and review of the self-complexity literature, however, concluded that there was very mixed support for the buffering hypothesis (Rafaeli-Mor & Steinberg, 2002). In addition to observing inconsistent findings regarding the buffering hypothesis, Rafaeli-Mor and Steinberg found that there was a small but reliable direct relation between greater self-complexity and *poorer* well-being. For example, across several experiments that used a variety of trait sort materials, outcome measures, measures of self-complexity, and subject populations, Woolfolk et al. (1995) found no evidence of the stress by self-complexity interaction predicted by the buffering hypothesis. Instead, Woolfolk et al. observed significant zero-order correlations showing that as participants' self-complexity increased, they were *more* likely to report greater depression and lower self-esteem. It should be noted that

such a direct relation is not contradictory to the interaction predicted by the buffering hypothesis. However, these findings show that for *the average person*, greater self-complexity may have deleterious rather than desirable consequences. These findings suggest that our understanding of self-complexity is far from complete, and the focus of the current work was to test a moderator that might account for when greater self-complexity is more detrimental.

It is interesting to note that although issues associated with self-complexity lie at a rich nexus of literatures in social cognition, the self, depression, self-esteem, and efficacious behavior, research has not attempted to identify individual differences that could specify limiting conditions for the implications of self-complexity. We propose that features of one's self-aspects can moderate the relation between self-representation and well-being. Specifically, we reasoned that although greater self-complexity might be beneficial in buffering on-going life stressors, the availability of a greater number of more differentiated self-aspects would not be beneficial if people did not perceive that their multiple selves were under their control. Instead, having many self-aspects that are out of one's control and in different ways would leave one feeling "stretched too thin," resulting in poorer well-being. Although measuring self-complexity attempts to capture the number of self-aspects and the redundancy of traits associated with those self-aspects, it does not assess important qualitative features of those multiple selves that might distinguish whether they are, or are not, beneficial for social functioning.

Indeed, research has shown that perceiving control over one's life is beneficial for promoting feelings of self-efficacy (Bandura, 1986, 1997) and for developing intrinsic motivation and self-determination (Deci & Ryan, 1985; Ryan & Deci, 2000). As perceptions of control increase, anxiety and stress reactions decrease (Averill, 1973; Levine & Ursin, 1980). Relatedly, there are many findings indicating that reduced perceptions of control lead to depression and learned helplessness (e.g., Abramson, Seligman, & Teasdale, 1978; Beck, 1976; Seligman, 1975; Thompson, Sobolew-Shubin, Galbraith, Schwankovsky, & Cruzen, 1993). Control over elements of one's life appears to have real consequences for one's well-being and health. For instance, nursing home residents who were given opportunities to exercise some degree of on-going control over events in their daily lives were more engaged in social activities, remained in better health, and lived longer than those who remained dependent on health care providers (Langer & Rodin, 1976; Rodin, 1986; Rodin & Langer, 1977). Thus, many findings reveal those who perceive or have less control over their lives experience poorer well-being.

Consistent with our reasoning is work that examined the relations among similarity of traits associated with particular social roles, measures of well-being, and ratings of role authenticity (Sheldon, Ryan, Rawsthorne, & Ilardi, 1997). Authenticity, in this context, refers to the phenomenological experience that one's behaviors are authored by the self, internally caused, and reflect choice and self-expression. This notion of authenticity shares much in common with perceptions of control outlined above (see also, Ryan & Deci, 2000). In two studies, Sheldon et al. (1997) found that people who reported greater authenticity fared better on well-being measures above and beyond the contribution of trait similarity and measures of conflict among their roles. Although the current research acknowledges the importance of control (similar to Sheldon et al.), we argue that beliefs about control for the self may interact with self-concept representation. In other words, whereas Sheldon et al. explored the unique direct contributions of authenticity on well-being, the current work examined the interaction between control over self-aspects and self-concept representation on well-being.

Because perceptions of control are important for psychological and physical health, we examined the role of perceived self-aspect control in moderating the relation between self-complexity and subsequent outcomes in the current studies. We reasoned that having many and diverse self-aspects would only be beneficial when those multiple selves support the efficacious pursuit of one's goals. Because perceptions of control, autonomy, and stability about the self are regarded as important for successfully meeting life's challenges (e.g., Abramson et al., 1978; Bandura, 1997; Deci & Ryan, 1985; Glass & Singer, 1972; Sherman & McConnell, 1995; Taylor & Brown, 1988; Thompson et al., 1993; Weiner, 1986), one should benefit by having diverse multiple selves that are greater in self-control. However, if one's multiple selves have an external locus of control, are imposed upon the self by others, and are unstable in nature, their availability should not be beneficial. Instead, increases in the number and diversity of low-control multiple selves should leave one feeling overwhelmed. In Study 1, we examined a moderator for the relation between self-complexity and well-being, perceived control over one's self-aspects. In Study 2, we replicated Study 1 and also evaluated whether self-aspect control was particular to one's control over multiple selves, or whether it reflected broader causal attributions and individual differences. Thus, the current work attempted to identify a theoretically important moderator that would not only suggest self-complexity boundary conditions, but potentially address conflicting findings in the literature.

Study 1: Self-aspect control as a moderating variable

As people greater in self-complexity perceive less control over their self-aspects, having many diverse

multiple selves should prove to be a liability because self-aspects that are low in perceived control cannot serve effective well-being. That is, having several different and unique low-control self-aspects should lead to especially poor functioning. Conversely, for those who perceive a great deal of control over their self-aspects, having more and diverse selves that can serve adaptive social functioning should promote well-being. Thus, this *self-aspect control hypothesis* predicted a self-complexity by self-aspect control interaction in predicting outcome measures. Unlike the buffering hypothesis, which predicts that current stress manifests itself in down-the-road outcomes, the self-aspect control hypothesis predicts a self-complexity by self-aspect control interaction for predicting outcomes regardless of time period (i.e., now or in the future). In other words, the self-aspect control hypothesis does not attempt to account for how recent stressful events affect subsequent well-being, but rather, it focuses on how control over one's multiple selves has on-going implications for the relation between self-concept representation and well-being.

During an initial testing session (hereafter referred to as Time 1), participants completed a self-complexity trait sort task, reported the extent to which they had recently experienced negative events in their lives (i.e., stress), reported perceptions of control and positivity for their multiple selves, and reported on several outcomes associated with well-being: stress-related physical illnesses, depression, perceived stress, negative life events, and self-esteem. At a second experimental session two weeks later (Time 2), participants responded to all of the aforementioned outcome measures.

Based on previous findings, two patterns of results might emerge. First, according to the self-complexity buffering hypothesis, one might anticipate that for those experiencing more stress in their lives, greater self-complexity might serve to buffer stress-related Time 2 outcomes. This would result in a stress by self-complexity interaction in predicting changes in the outcome measures, with the specific pattern showing that for those experiencing more stress in their lives, greater self-complexity would be related to greater well-being (Linville, 1987). However, a second pattern of results might be anticipated. Specifically, we might observe that greater self-complexity is related to poorer well-being (Rafaeli-Mor & Steinberg, 2002), and if so, we predicted that the extent to which people reported control over their self-aspects would moderate this relation. Thus, those with less self-aspect control would show a stronger relation between greater self-complexity and poorer well-being, consistent with the self-aspect control hypothesis.

Method

Participants

At Michigan State University, 127 undergraduates enrolled in introductory psychology courses participated in exchange for extra credit.

Measures

Self-complexity task. Participants completed a self-complexity card sort task using a computer program developed by Renaud and McConnell (2002). They were presented either with a list of 33 traits used (used by Linville, 1987) or a list of 40 traits (used by Showers, 1992). The former trait list set, although featuring some ambivalent traits (e.g., quiet, unconventional), had more positive traits than negative traits. The latter trait list set had 20 unambiguous positive traits (e.g., friendly, intelligent) and 20 unambiguous negative traits (e.g., insecure, irritable). Assignment to trait list type was randomly determined ($n = 64$ and $n = 63$, respectively), and analyses revealed no effect (main or interactive) of trait list type on any measures. Additional analyses were conducted by standardizing self-complexity scores *within* each trait set type and using these standardized values in analyses. The results using the standardized scores were identical to the ones to be reported (based on the computed H). Thus, this factor receives no further attention, and H was used as the measure of self-complexity.

Participants placed traits into groups that represented meaningful aspects of their lives. Using a window-based interface, they selected the traits that they wanted to use for each self-aspect and provided a descriptive label for the self-aspect. Participants were told that they could use as many traits as they wanted for each self-aspect, could use a trait in multiple self-aspects, and did not have to use all of the traits provided (Linville, 1987). They were told to create as many self-aspects as were meaningful to them and to stop if generating new ones was difficult.

Following previous research (e.g., Linville, 1985, 1987; Woolfolk et al., 1995), a self-complexity score was computed for each participant using the H statistic (Scott, 1969), which takes into account the number of self-aspects generated and the degree to which the traits that comprise those self-aspects are nonredundant with each other across self-aspects:

$$H = \log_2 n - \left(\sum_i n_i \log_2 n_i \right) \Big/ n,$$

where n is the total number of traits available to the participant (33 or 40 in the current experiment) and n_i is the number of traits that occur within each particular group combination (i) across the self-aspects reported by

the participant.[1] H can be understood as an index of the minimal number of independent binary combinations of traits needed to reproduce a participant's entire self-complexity sort (for additional discussion, see Linville, 1987; Woolfolk et al., 1995).

Immediately after participants completed the self-complexity task, they were asked to consider each self-aspect they had generated and to provide judgments about the positivity of each self-aspect and about how much control they had over it. First, they rated how positive each self-aspect was on a scale ranging from 1 (*very negative*) to 7 (*very positive*). An overall positivity score was computed based on the mean of the positivity ratings for their self-aspects. The next three questions assessed perceptions of control over each self-aspect. Participants rated how much control they have over each self-aspect on a scale ranging from 1 (*I have no control over it at all*) to 7 (*I control it completely*). Next, they reported the extent to which the self-aspect was self-initiated on a scale ranging from 1 (*started solely by others*) to 7 (*started solely by me*). Finally, they assessed how stable the self-aspect was on a scale ranging from 1 (*very unstable*) to 7 (*very stable*). The mean of each of the three control-related questions was computed across each participant's self-aspects, and these three means showed adequate reliability across participants ($\alpha = .64$). Thus, a *control score* was computed for each participant by calculating the mean of the three control-related questions. As participants' control scores increased, they reported that their average self-aspect was more under their control, more self-initiated, and more stable. Participants continued responding to the positivity and control-related questions for each self-aspect until all of their self-aspects had been rated.

Self-esteem. Participants completed the Rosenberg (1965) Self-Esteem Scale. On this instrument, respondents endorsed their agreement with 10 statements (e.g., "I feel that I have a number of good qualities") on a scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). The sum of the participants' responses (reverse coded for five of the items) represented their self-esteem score. Although Linville (1987) did not report self-esteem measures, we assessed self-esteem in the current work because it is a frequently used indicator of well-being.

Physical symptoms. The Cohen–Hoberman Inventory of Physical Symptoms (Cohen & Hoberman, 1983) was used to assess participants' reports of experiencing 39 common illnesses and physical symptoms associated with stress (e.g., sleep problems, nausea, and muscle cramps). Participants indicated the severity for each symptom in the previous two weeks on a scale ranging from 1 (*not been a bother*) to 5 (*been an extreme bother*). The sum of these scores was computed and was used as the measure of physical symptoms.

Depression. Participants completed the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) as a measure of depression. It consists of 13 items where respondents choose one of four statements that vary in the extent to which they represent depressed feelings (e.g., "I don't feel disappointed in myself," "I am disappointed in myself," "I am disgusted with myself," and "I hate myself"). Each response was scored using a scale ranging from 0 to 3, and the sum of these responses indicate reporting more depressed feelings.

Life events. Participants completed the College Student Life Events Scale (Levine & Perkins, 1980) to assess stressful life events. They responded to 137 items (e.g., "broke up with boyfriend or girlfriend"), indicating whether each event had been experienced in the previous two weeks, in the previous six months, or not at all. In cases where participants reported that the event occurred, they also indicated whether the event was positive, neutral, or negative in valence. Because past research (Linville, 1987; Woolfolk et al., 1995) focused on negative life events that result from stress, we used the total number of endorsements for negative life

[1] A group combination refers to traits uniquely associated with a specific combination of self-aspects. For example, consider someone who produces three self-aspects in a self-complexity sort task and that a particular trait for this person appears in two of those self-aspects (e.g., in 1 and 2, but not 3). This trait would be identified as a member of the group combination 1–2. In this example, each of the 33 traits could be associated with one the following group combinations: 1, 2, 3, 1–2, 1–3, 2–3, 1–2–3, or no group at all (i.e., those traits not used at all in the sort task). In this example, there would be 8 possible group combinations (i) with n_i traits associated with each combination. Thus, the number of potential group combinations increases as more self-aspects are generated (e.g., adding a fourth self-aspect would increase the total number of potential group combinations from 8 to 16) and as the traits used in those self-aspects are uniquely associated (i.e., nonredundant) with particular group pairing combinations.

It should be noted that there are many alternative approaches to assessing self-concept organization and structure, including approaches that focus on the consistency of how a set of traits are applied to self-aspects (e.g., Donahue, Robins, Roberts, & John, 1993; Woolfolk et al., 1995, Experiment 4), assess the integration and separation of positive and negative traits among self-aspects (Showers, 1992), use spatial overlap in an Associated Systems Theory framework (Schleicher & McConnell, 2003), and attempt to separate the number of self-aspects from the overlap of attributes that comprise them (Rafaeli-Mor, Gotlib, & Revelle, 1999). Because our goal is to better understand different patterns of findings in the self-complexity literature, we focused on H and this conceptualization of self-complexity in the current work.

Table 1
Descriptives of and intercorrelations among self-complexity, stress, and outcome measures in Study 1

	Descriptives		Time 1 measure zero-order correlations			
	M	*SD*	*H*	Stress	Positivity	Control
Time 1 measures						
Self-complexity (*H*)	2.33	.84	—			
Negative life events (2 weeks)	3.07	3.25	.19*	—		
Self-aspect positivity	5.36	.92	−.28**	−.23*	—	
Self-aspect control	5.10	.63	−.45**	−.15	.55**	—
Physical symptoms	27.58	18.85	.23*	.24*	−.24**	−.24**
Depression	4.46	4.04	.29**	.34**	−.43**	−.31**
Perceived stress	39.92	7.00	.10	.35**	−.19**	−.19*
Self-esteem	32.02	4.89	−.16	−.34**	.50**	.38**
Negative life events (6 months)	4.22	3.75	.36**	.21*	−.16	−.20*
Time 2 measures						
Negative life events (2 weeks)	3.11	3.56	.26**	.70**	−.18*	−.14
Physical symptoms	20.98	17.95	.25**	.35**	−.27**	−.28**
Depression	3.82	4.50	.31**	.38**	−.37**	−.28**
Perceived stress	37.91	7.94	.16	.50**	−.23**	−.28**
Self-esteem	36.68	5.14	−.16	−.33**	.47**	.34**
Negative life events (6 months)	3.15	3.61	.24**	.40**	−.23**	−.19*

Note. Stress, Time 1 negative two week life events; $N = 127$.
* $p < .05$.
** $p < .01$.

events in the past two weeks as the measure of stress to assess the buffering hypothesis.[2]

Perceived stress. Participants completed the Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983). They responded to 14 items, indicating the extent to which they had experienced feelings associated with stress (e.g., "felt upset because of something that happened unexpectedly") during the preceding two weeks on a scale ranging from 1 (*never*) to 5 (*very often*). Responses to the items were summed (half were reverse scored) such that larger scores represented experiencing relatively greater perceived stress.

Procedure

Participants completed the two experimental sessions exactly two weeks apart. Each session was run at individual computer workstations, which administered the entire session and collected the data. At the Time 1 session, participants completed the self-complexity task, the self-esteem measure, the physical symptoms survey, the depression inventory, the life events questionnaire, and the perceived stress scale (in that order). Two weeks later (Time 2), participants completed the same instruments from the Time 1 session except for the self-complexity task. Following completion of the Time 2 session, participants were debriefed and thanked for their participation.

Results

Table 1 reports the mean, standard deviation, and selected zero-order correlations of measures of self-complexity, stress, self-aspect positivity, and self-aspect control with each other and with the outcome variables.[3] Consistent with findings in the literature reported by Rafaeli-Mor and Steinberg (2002), Table 1 reveals that as self-complexity increased, measures of physical symptoms increased, depression increased, and negative life events increased. Thus, greater self-complexity was related to poorer well-being. Interestingly, Table 1 also reveals that as self-complexity increased, perceptions of self-aspect control and self-aspect positivity *decreased*. Thus, in addition to observing that greater self-complexity was related to more negative outcomes (e.g., more physical illness, greater depression), greater self-complexity was also related to participants feeling less control and more negative about their self-aspects. Also,

[2] Linville only explored negative two-week events as an index of life stress. Our data, however, suggested that either negative events in the past two week or in the past six months might serve this role well. We present analyses only examining negative two-week events as our measure of stress in order to reproduce Linville's (1987) findings. Analyses conducted using negative life events during the past six months produced similar results.

[3] It should be noted that all of the outcome measures showed significant intercorrelations in the expected directions (e.g., greater depression predicted lower self-esteem and more physical illnesses) in all of the current studies.

Table 2
Standardized regression weights for predictor variables related to testing the buffering hypothesis in Study 1

Time 2 outcome	Standardized regression weights for Time 1 predictors			
	Outcome	Stress	*H*	Stress × *H*
Physical symptoms	.68**	.26	.07	−.09
Depression	.71**	−.05	.07	.19
Perceived stress	.52**	.18	.04	.14
Self-esteem	.85**	−.04	−.03	.03

Note. Stress, Time 1 negative two week life events; $N = 127$.
* $p < .05$.
** $p < .01$.

stress was reliably related to poorer well-being.[4] Finally, as people reported greater self-aspect positivity and control, greater well-being was observed.

To test the buffering hypothesis, we conducted multiple regression analyses where each Time 2 outcome measure was regressed on its Time 1 counterpart, stress (i.e., Time 1 negative two-week life events), *H* (i.e., self-complexity), and a product term of *H* and stress.[5] The buffering hypothesis would predict a significant interaction term. Results are presented in Table 2, and no support for the buffering hypothesis was found on any of the four outcome measures. That is, the stress by self-complexity interaction was nonsignificant in each case. The only significant effects observed were for the Time 1 measure for each of the four outcomes, indicating that Time 1 scores were related to Time 2 scores for each measure. Thus, no support for the buffering hypothesis was found.

The final set of analyses explored the self-aspect control hypothesis (i.e., whether self-aspect control would moderate the zero-order relations between self-complexity and the outcomes). It was predicted that the relations between greater self-complexity and poorer well-being would be stronger as participants reported that their self-aspects were less under their control, resulting in an interaction between *H* and self-aspect control. To test this prediction, multiple regression analyses were conducted with each outcome measure regressed on *H*, self-aspect control, a product term of *H* and self-aspect control, and self-aspect positivity. Self-aspect positivity was included in order to observe how self-aspect control would uniquely moderate the relation between *H* and outcomes after controlling for self-aspect positivity. In other words, self-aspect control and self-aspect positivity were strongly related (and positivity was strongly related to the outcome measures), but we wanted to assess the unique role of self-aspect control as a moderator rather than have it be confounded with self-aspect positivity. Analyses omitting self-aspect positivity as a predictor produced similar results.[6]

An interaction between self-complexity and self-aspect control was expected to show that those greater in self-complexity and perceiving less self-aspect control would exhibit more negative consequences (e.g., greater depression, lower self-esteem). Unlike the buffering hypothesis, the self-aspect control hypothesis does not attempt to account for changes in outcomes based on recent negative life experiences. Instead, it focuses on how control over one's self-aspects more broadly relates to well-being.[7] Thus, analyses examining outcomes from both Time 1 and Time 2 measures are presented in Table 3.

As Table 3 reveals, the self-control by self-complexity interaction was significant for Time 1 physical symptoms, Time 2 physical symptoms, Time 1 depression, Time 2 depression, Time 1 negative six-month life events, Time 1 self-esteem, and Time 2 self-esteem. Thus, evidence consistent with the self-aspect control hypothesis was found for several, but not all, of the

[4] We would note, however, that significant zero-order correlations between stress and outcomes are not required to test the buffering hypothesis (cf., Linville, 1987). That is, because the buffering hypothesis predicts that self-complexity moderates the effect of stress on negative outcomes, one might find significant self-complexity by stress interactions for the outcome measures even if the main effect of stress is not observed.

[5] In all interaction regression analyses in the current work, measures were centered such that each interaction term was orthogonal to its constituent variables (Aiken & West, 1991).

[6] Because several of the predictor variables were related to each other, some readers might have concerns about multicollinearity and the interpretation of these effects. Variance inflation factors (VIFs) were computed for all predictor variables in the multiple regressions reported in this work. In all cases, VIFs were low (less than 1.5) and far below values that might indicate interpretation concerns (i.e., VIFs > 10; see Neter, Kutner, Nachtsheim, & Wasserman, 1996).

[7] One might consider conducting analyses to test the self-aspect control hypothesis where Time 1 outcome measures are included in the regression equations to predict only Time 2 outcomes (similar to the buffering hypothesis). Although many of these analyses produce results similar to those to be reported, such analyses are not an appropriate way to test the self-aspect control hypothesis. Unlike the buffering hypothesis that attempts to predict change as a result of recent stress (hence the need to include Time 1 outcome measures as a covariate), the self-aspect control hypothesis proposes a moderator for the relation between self-complexity and overall well-being. In essence, including a Time 1 outcome measure as a predictor in the regression equation partials out stable and on-going well-being in the Time 2 criterion variable, and it is overall well-being that is the focus of the self-aspect control hypothesis.

Table 3
Standardized regression weights for predictor variables related to testing the self-aspect control hypothesis in Study 1

Outcome	Standardized regression weights			
	Positivity	Control	*H*	Control × *H*
Time 1				
Physical symptoms	−.15	.31	.12	−.46*
Depression	−.37*	.37	.16	−.44*
Perceived stress	−.13	−.16	.01	−.12
Self-esteem	.43*	−.25	.05	.45*
Negative life events (2 weeks)	−.19	−.18	.16	.22
Negative life events (6 months)	−.06	.43*	.31*	−.50*
Time 2				
Physical symptoms	−.17	.26	.13	−.42*
Depression	−.32**	.56**	.20*	−.63**
Perceived stress	−.11	−.25*	.03	−.14
Self-esteem	.41*	−.27	.02	.43*
Negative life events (2 weeks)	−.13	−.01	.24*	.06
Negative life events (6 months)	−.18	.31	.17	−.35

Note. Positivity, mean self-aspect positivity; Control, mean self-aspect control; $N = 127$.
* $p < .05$.
** $p < .01$.

outcome measures. It is important to note that the self-aspect control hypothesis predicted a specific interaction pattern: outcomes would be more negative for those who perceived less self-aspect control and who were greater in self-complexity. Each interaction involving Time 1 outcomes was graphed using the nonstandardized coefficients plotting self-complexity along the abscissa (with a range of ±1 *SD*) and two lines, one representing relatively low self-control ($M - 1$ *SD*) and the other representing relatively high self-control ($M + 1$ *SD*). These graphs are presented in Fig. 1 (readers should note that because the signs for the regression weights involving Time 2 outcomes were identical to those involving Time 1 outcomes, these graphs illustrate the interactions involving Time 2 outcomes as well). Each of these graphs reveals the specific interaction pattern predicted by the self-aspect control hypothesis. Specifically, as people reported less control over their self-aspects, they showed a stronger relation between greater self-complexity and more stress-related physical symptoms, lower self-esteem, greater depression, and more negative life events. Thus, self-aspect control proved to be a significant moderator for observed zero-order relations, and the nature of the interaction was exactly as predicted by the self-aspect control hypothesis.[8]

[8] Additional regression analyses investigated whether a three-way interaction between *H*, self-aspect control, and stress (Time 1 two-week negative life events) might obtain for the Time 2 outcome measures. One might predict that the *H* by self-control interaction might be especially strong for those experiencing more stress. However, no such effects were observed.

Discussion

Study 1 found strong support for the self-aspect control hypothesis. That is, for those who reported less control over their self-aspects, greater self-complexity was associated with poorer well-being. This pattern was attenuated for those who reported greater control over their self-aspects. Thus, the identification of a moderator for the relation between greater self-complexity and more negative outcomes provides an important first step for understanding the implications of self-complexity for well-being. It is interesting to note that no evidence consistent with the buffering hypothesis was found. Instead, greater self-complexity was related to more physical illnesses, greater depression, more negative life events, and lower self-esteem. Thus, the current results replicated other findings in the literature showing that greater self-complexity related to poorer well-being (Rafaeli-Mor & Steinberg, 2002), but more important, it demonstrated that perceptions of control over one's multiple selves moderated this effect.

Although these findings provide good support for the self-aspect control hypothesis, the current study raises interesting questions about what psychological factors are involved in this outcome. For instance, is it perceptions of control over one's self-aspects (e.g., roles, relationships, idealized selves), a depressive explanatory style, uncertainty about why events in the social world occur in general, or a history of traumatic life events that are responsible for the interactions observed in Study 1? Our initial assumption was that control over the meaningful aspects of one's life was responsible for the observed

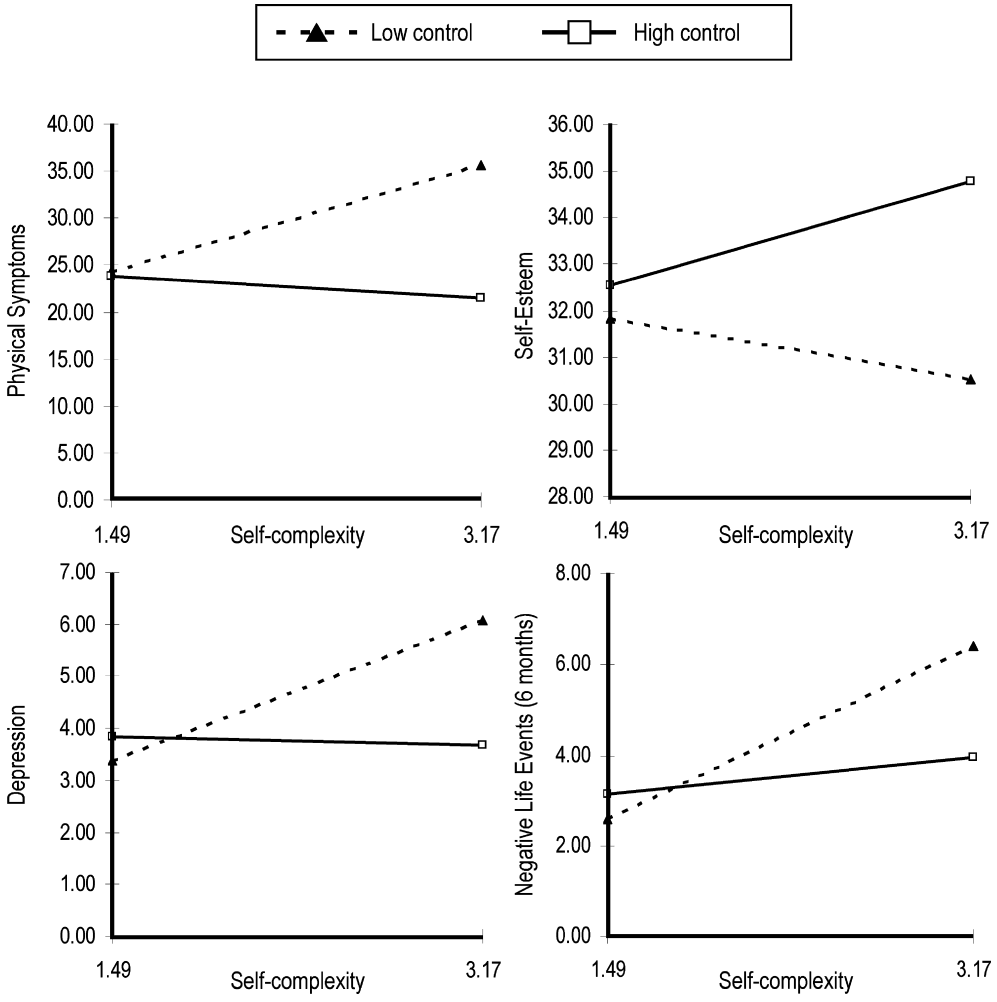

Fig. 1. Interactions between self-aspect control and self-complexity in predicting Time 1 outcome measures in Study 1.

moderating effects. We focused on perceptions of control over one's self-aspects because self-complexity theory emphasizes self-aspects in the construction of self-concept, though their construal is broad and subject to the idiosyncratic interpretation of those completing the self-complexity measure. However, it is possible that perceptions of control over one's self-aspects are actually a consequence of broader attributional constructs (e.g., depressive explanatory style) that affect both perceptions of self-aspect control and well-being. In other words, although the self-complexity by self-aspect control interaction was found across several measures in Study 1, it might be the case that it is really not control over one's multiple selves in particular, but rather, other related attributions and experiences that are responsible for the moderation observed in the first study. Thus, Study 2 evaluated whether alternative attributional frameworks could account for the self-aspect control interaction.

Study 2: Alternative explanations for the self-aspect control hypothesis

It has long been acknowledged that how people interpret the causes of events in their lives and in the world more generally affects their sense of well-being (for a review, Weiner & Graham, 1999). For instance, people hold attributions for explaining the causes of events more generally (e.g., Why do things happen in the social world?) and for self-relevant events in particular (e.g., Why do bad things happen to me?). For example, people can vary in their explanations for negative events in their lives (i.e., depressive attributional styles; Seligman, Abramson, Semmel, & von Baeyer, 1979) and in their attributions about causality more generally (i.e., causal uncertainty; Weary & Edwards, 1994). The current study examined whether these facets of attribution, each of which has been implicated in poorer well-being, might underlie the self-aspect control hypothesis supported in Study 1.

For instance, people who frequently experience helplessness in the face of negative life events may develop a depressive attributional style, which can lead to depression (Peterson & Seligman, 1984; Seligman et al., 1979). These are generalized beliefs that the negative events one experiences are caused by stable, global, and internal influences. Rather than being beliefs about control over one's multiple selves in particular (e.g., roles, relationships), a depressive attributional style is a persistent causal schema that reflects generalized expectations that negative life events will be pervasive and uncontrollable. Accordingly, Study 2 measured participants' depressive attributional styles to examine whether they could account for the self-aspect control hypothesis interaction effect.

In addition to findings that self-relevant attributions can affect well-being, researchers have also identified an individual difference, causal uncertainty, that relates to depression and to poorer well-being (e.g., Edwards, Weary, & Reich, 1998; Weary & Edwards, 1994). Causal uncertainty is the belief that one does not know why events in the social world happen in general. Perceiving an inability to explain events produces an uncomfortable feeling that one attempts to reduce by more carefully processing information about the social world in search of a better understanding for why events occur (Weary & Edwards, 1994). To the extent that causal uncertainty might reduce perceptions of control over one's self-aspects, it is possible that causal uncertainty is an antecedent cause of the effects observed in Study 1. Thus, we assessed causal uncertainty in Study 2 to determine if the self-aspect control hypothesis is actually driven by perceptions of not understanding why things happen in the social world more generally.

Finally, we considered the possibility that self-complexity is a response to extremely negative life events, which might explain the relations between greater self-complexity and poorer well-being. To the extent that self-concept representation is flexible and may respond to life's challenges (e.g., Showers, Abramson, & Hogan, 1998), people who have experienced more sizable negative life events (e.g., death of a parent) may feel that they have less control over their lives and may respond with greater self-complexity to minimize spillover effects. Thus, the relation between greater self-complexity and poorer well-being may reflect negative events that led to poorer adjustment (e.g., greater depression, lower self-esteem) and also led to greater self-complexity in an attempt to minimize the affective consequences of traumatic life events. Showers et al. (1998) found evidence consistent with this flexible self-concept possibility in clinically depressed participants, and we explored it in Study 2 as well.

Thus, Study 2 set out to replicate Study 1 and examined three alternative or co-occurring possibilities for the self-aspect control hypothesis. One explanation is that traumatic life events give rise to both poorer well-being, greater self-complexity, and reduced perceptions of control over self-aspects. Accordingly, we assessed participants' histories of traumatic life events to examine whether they related to self-complexity, self-aspect control, and well-being. Two other alternatives involved different perspectives on causal attribution. Specifically, we measured participants' causal uncertainty and depressive attributional style. We anticipated that we would replicate the self-complexity by self-aspect control interaction observed in Study 1. Moreover, we assessed whether these three alternatives could account for this effect. If so, they could suggest that the self-aspect control hypothesis is really grounded in response to previous life traumas, to a pervasive schema for explaining negative events in one's life (i.e., depressive attributional style), or to more general beliefs about causality in the social world (i.e., causal uncertainty). In the event that none of these alternatives can account for the self-aspect control effect, it would seem that beliefs about control over one's multiple selves in particular provide the best account for the relation between greater self-complexity and poorer well-being. Finally, Study 2 provided another opportunity to observe the buffering hypothesis.

Method

Participants

At Miami University, 105 undergraduates enrolled in introductory psychology courses participated to fulfill a research requirement. With some minor modifications to assess participants' attributions (to be described), the procedure replicated Study 1.

Measures

Self-complexity task. Participants completed the self-complexity task used in Study 1 except that all participants were provided with the 33 traits used by Linville (1987). Following the self-complexity trait sort task, participants completed the same measures of self-aspect control and self-aspect positivity that were collected in Study 1.

Causal uncertainty. The Causal Uncertainty Scale (Weary & Edwards, 1994) was used to measure participants' perceptions of their ability to understand cause-and-effect relationships. Participants responded to 14 items (e.g., "When bad things happen, I generally do not know why"), indicating the extent to which they agreed with each statement on a scale ranging from 1 (strongly disagree) to 6 (strongly agree). Reliability for the 14-item scale was good ($\alpha = .81$), and thus the mean response to the items was calculated, reflecting how strongly participants endorsed greater uncertainty about general causal relations in the world.

Depressive attributional style. The revised version of the Expanded Attributional Style Questionnaire (EASQ; Whitley, 1991) was used to assess attributions made for a variety of negative events. This scale is a shortened version of the instrument developed by Peterson and Villanova (1988), and it assesses attributional styles related to depressive symptoms and depressed mood. Participants responded to 12 hypothetical situations (e.g., "After your first term at school, you are on academic probation") on three 6-point scales addressing locus of control (totally due to others vs. totally due to me), globality (influences this situation vs. influences all situations in my life), and stability (will never be present again vs. will always be present). The locus ($\alpha = .60$), globality ($\alpha = .66$), and stability ($\alpha = .80$) subscales revealed adequate reliability across the 12 situations, and all 36 items together were related ($\alpha = .62$; similar reliabilities have been reported on a variety of attribution style instruments, see Stoltz & Galassi, 1989). Thus, an overall mean score was computed (Peterson & Seligman, 1984). As EASQ mean scores increased, participants reported that their responses to hypothetical negative scenarios were characterized by being caused by their own actions, global in scope, and always present. In other words, larger scores reflected a more depressive attributional style.

Traumatic life events. Participants indicated whether they had experienced any of 34 traumatic events in their lives (e.g., had experienced a life threatening illness, had disruptive moves and relocations as a child). The items were selected based on pretesting, which produced a set of traumatic life experiences that undergraduates in the sample population had reported experiencing. The total number (out of 34) of endorsements served as the measure of traumatic life events experienced by the participant.

Depression measure. The Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) was used in the current experiment to assess depressed affect. Participants endorsed the extent to which they had experienced 20 different affect-related symptoms in the past two weeks (e.g., "I felt that people disliked me") on a 4-point scale. We used the CES-D instead of the BDI in Study 2 because it is a potentially more sensitive measure of depressed affect that might show greater variability with an undergraduate population and because several other self-complexity studies have used it (e.g., Linville, 1987; cf., Woolfolk et al., 1995).

Procedure

Similar to Study 1, participants completed two experimental sessions exactly two weeks apart from each other. The procedure replicated Study 1 with the following exceptions. At the Time 1 session, participants completed the self-complexity task, the self-esteem measure, the physical symptoms checklist, the CES-D, the life events questionnaire, the perceived stress scale, and finally the traumatic life events checklist. At Time 2, participants completed the same outcome measures from Study 1 at Time 2, and afterwards, completed (using a paper-based packet) the causal uncertainty scale and the EASQ scale.[9] After completing all of the tasks, participants were debriefed and thanked for their participation.

Results

Attribution measures and their correlates

Table 4 reports the mean, standard deviation, and zero-order correlations among traumatic life events, the attribution measures, self-complexity, self-aspect control and positivity, and the outcome measures at Time 1 and Time 2. Many of the attribution-related and traumatic life events measures, as one would expect, were related to each other and the outcome measures. For example, as people reported a greater number of traumatic life events, they also reported more causal uncertainty, and showed poorer well-being at Time 1 and at Time 2 (i.e., greater physical symptoms, greater depression, greater perceived stress, lower self-esteem, more negative life events). A similar pattern was observed for causal uncertainty. Specifically, as people reported greater causal uncertainty, they reported more traumatic life events and a more depressive attributional style. Thus, as one would expect, greater causal uncertainty was related to more negative causal attributions. Accordingly, those with greater causal uncertainty showed less self-aspect positivity and poorer well-being at Time 1 and Time 2 on 11 out of 12 measures. Clearly, greater causal uncertainty was associated with an array of negative attributional, emotional, and physical consequences for participants in this study.

The EASQ was related to causal uncertainty (as expected, those with a more depressive attributional style were greater in causal uncertainty), and it was related to several outcome measures as expected. In particular, those with a greater depressive attributional style reported greater physical symptoms at Time 1 and Time 2, greater perceived stress at Time 1 and Time 2, less self-esteem at Time 1, more negative life events in the past two weeks at Time 2, and tended to show greater depression at Time 2. Thus, those with a more depressive attributional style reported poorer well-being on several measures.

[9] Participants also completed the Sense of Control Scale (Mirowsky & Ross, 1991) to assess perceptions of locus of control over self-relevant positive and negative events. Unfortunately, the scale lacked reliability ($\alpha = .46$), and analyses exploring potential effects for it failed to yield any significant findings. Thus, it receives no further discussion.

Table 4
Descriptives of and intercorrelations among attributional measures and outcome measures in Study 2

	Descriptives		Attribution measure correlations		
	M	*SD*	TLE	CU	EASQ
Attribution measures					
Traumatic life events (TLE)	4.49	3.02	—		
Causal uncertainty (CU)	2.60	.68	.21*	—	
EASQ mean (EASQ)	3.92	.51	.08	.24*	—
Time 1 measures					
Self-complexity (*H*)	2.75	.81	.01	−.03	.04
Self-aspect control	4.89	.66	.05	−.11	−.05
Self-aspect positivity	5.15	.98	−.11	−.26**	−.04
Negative life events (2 weeks)	2.78	2.87	.00	.35**	.17
Physical symptoms	29.27	17.86	.21*	.37**	.21*
Depression	34.61	4.80	.29**	.31**	.08
Perceived stress	38.04	6.85	.19†	.31**	.23*
Self-esteem	31.76	4.80	−.26**	−.42**	−.26**
Negative life events (6 months)	5.41	4.22	.42**	.17	−.02
Time 2 measures					
Negative life events (2 weeks)	2.91	2.73	.30**	.24*	.22*
Physical symptoms	21.71	17.46	.24*	.41**	.25*
Depression	33.10	9.74	.30**	.32**	.17†
Perceived stress	37.05	8.05	.20*	.28**	.20*
Self-esteem	32.31	4.87	−.33**	−.47**	−.14
Negative life events (6 months)	3.63	3.54	.37**	.24 *	.01

Note. $N = 105$.
* $p < .05$.
** $p < .01$.
† $p < .08$.

In sum, the traumatic life events measure, the causal uncertainty scale, and the EASQ related to each other and to relevant well-being outcomes as one would expect. Having established that traumatic life events and that the attribution-related measures related to the outcomes of interest as expected, we now turn our attention toward examining if they can account for the self-aspect control hypothesis.

Evaluating the buffering and self-aspect control hypotheses

Zero-order correlations were conducted to examine the extent to which *H*, stress (negative life events over the past two weeks), self-aspect positivity, and self-aspect control were related to the outcome measures and to the attribution measures. The results are reported in Table 5. Replicating Study 1, those greater in self-complexity revealed greater depression (Time 1 and Time 2), and more physical symptoms, greater perceived stress, and more negative life events in the past two weeks at Time 2. In general, poorer Time 1 and Time 2 outcomes were also related to greater stress, less self-aspect positivity, and less self-aspect control. Finally, those greater in causal uncertainty revealed greater stress and less self-aspect positivity. Thus, Study 2 replicated the basic pattern of zero-order correlations showing that greater self-complexity, overall, was related to poorer well-being.

To test the buffering hypothesis, multiple regression analyses were conducted regressing each of the Time 2 outcomes (i.e., physical symptoms, depression, perceived stress, and self-esteem) on its Time 1 counterpart, stress, *H*, and the stress by *H* interaction. As Table 6 reports, the stress by self-complexity interactions were not obtained for any of the outcome measures. Thus, once again, no evidence of the buffering hypothesis was found. As expected, Time 1 measures were related to their Time 2 counterparts. Interestingly, *H* had a unique relation to depression and perceived stress. That is, when controlling for the other measures, those greater in self-complexity were *still* more likely to report greater depression and greater perceived stress.

In order to evaluate the self-aspect control hypothesis, a series of multiple regressions were conducted where self-aspect positivity, self-aspect control, *H*, and the self-aspect control by *H* interaction term were used to predict Time 1 and Time 2 outcomes. As Table 7 shows, the self-aspect control by self-complexity interaction made a unique contribution in predicting negative life events in the past six months at Time 1, and in predicting physical symptoms, depression, perceived stress, self-esteem, and negative life events in the past two weeks at Time 2. Each of these interactions was graphed based on the nonstandardized coefficients (each plotted with a range of ± 1 *SD*). As Fig. 2 shows, the self-aspect control hypothesis found in Study 1 was

Table 5
Intercorrelations involving self-complexity, stress, self-aspect positivity, and self-aspect control in Study 2

	Time 1 measure zero-order correlations			
	H	Stress	Positivity	Control
Time 1 outcome measures				
Self-complexity (*H*)	—			
Negative life events (2 weeks)	−.07	—		
Self-aspect positivity	−.22*	−.15	—	
Self-aspect control	−.31**	−.15	.53**	—
Physical symptoms	.15	.23*	−.22*	−.21*
Depression	.21*	.30**	−.25**	−.23*
Perceived stress	.13	.28**	−.29**	−.17
Self-esteem	−.07	−.27**	.24*	.25**
Negative life events (6 months)	.17	.06	−.19	−.07
Time 2 outcome measures				
Physical symptoms	.21*	.13	−.20*	−.25**
Depression	.30**	.14	−.20*	−.29**
Perceived stress	.31**	.20*	−.24*	−.32**
Self-esteem	−.09	−.20*	.23*	.18
Negative life events (2 weeks)	.23*	.23*	−.21*	−.25**
Negative life events (6 months)	.19	.23*	−.20*	−.20*
Attribution measures				
Traumatic life events	.01	.00	−.11	.05
Causal uncertainty	−.03	.35**	−.26*	−.11
EASQ mean	.04	.17	−.04	−.05

Note. Stress, Time 1 negative two-week life events; $N = 105$.
* $p < .05$.
** $p < .01$.

Table 6
Standardized regression weights for predictor variables related to testing the buffering hypothesis in Study 2

Time 2 outcome	Standardized regression weights for Time 1 predictors			
	Outcome	Stress	*H*	Stress × *H*
Physical symptoms	.77**	−.04	.09	.00
Depression	.64**	−.04	.16*	.02
Perceived stress	.68**	.02	.22**	−.03
Self-esteem	.81**	.04	−.03	.08

Note. Stress, Time 1 negative two-week life events; $N = 105$.
* $p < .05$.
** $p < .01$.

replicated. That is, the relation between greater self-complexity and poorer well-being (i.e., more negative life events, greater physical symptoms, greater depression, more perceived stress, and lower self-esteem) was stronger as participants reported less control over their multiple selves.

Additional regressions were conducted to examine whether the self-aspect control by self-complexity interaction would predict the attribution and traumatic life events measures. Such a finding would be a necessary first step for any of them potentially mediating the self-aspect control hypothesis. No such interactions were observed. To further rule out alternative accounts for the self-aspect control hypothesis, we conducted the same multiple regression analyses that supported the self-aspect control hypothesis (i.e., the six significant interactions from Table 7), and in separate models, included each of the alternative measures (i.e., traumatic life events, causal uncertainty, and defensive attribution style) and its interaction with *H* as predictors. In none of these 18 regressions (6 outcomes × 3 alternatives) did any alternative measure and its interaction with *H* reduce the effect size of the self-aspect control by self-complexity interaction (based on Sobel tests), nor was the alternative by *H* interaction significant. Thus, the self-aspect control by self-complexity interaction seems to be driven by perceptions of control over one's multiple selves in particular and not by attributions about the social world, pervasive negative attributional schemas, or about traumatic events in one's life more generally.

Table 7
Standardized regression weights for predictor variables related to testing the self-aspect control hypothesis in Study 2

Outcome	Standardized regression weights			
	Positivity	Control	*H*	Control × *H*
Time 1 measures				
Physical symptoms	−.14	−.10	.08	−.08
Depression	−.16	−.10	.13	−.11
Perceived stress	−.26*	−.01	.05	−.18
Self-esteem	.13	.19	.03	.16
Negative life events (2 weeks)	−.13	−.12	−.12	.10
Negative life events (6 months)	−.16	.06	.12	−.27**
Time 2 measures				
Physical symptoms	−.06	−.17	.12	−.21*
Depression	−.03	−.20	.21*	−.21*
Perceived stress	−.06	−.21*	.20*	−.22*
Self-esteem	.15	.09	.00	.23*
Negative life events (2 weeks)	−.07	−.13	.14	−.21*
Negative life events (6 months)	−.10	−.10	.11	−.19
Attribution measures				
Traumatic life events	−.18	.16	.01	−.09
Causal uncertainty	−.28*	.01	−.09	−.02
EASQ mean	−.02	−.03	.03	−.03

Note. Positivity, mean self-aspect positivity; Control, mean self-aspect control; $N = 105$.
* $p < .05$.
** $p < .01$.

Discussion

Study 2 replicated the findings of Study 1 and once again supported the self-aspect control hypothesis. Specifically, people reported poorer well-being (e.g., greater depression, lower self-esteem) as their self-complexity increased and their self-aspects were less under their control. Also, this study examined whether perceptions of control over one's self-aspects in particular, or other candidates, speak to how self-concept representation relates to well-being. In particular, we examined whether depressive attributional style, causal uncertainty, or history of traumatic life events might relate to self-complexity and well-being measures. The results indicated that perceptions of control about one's self-aspects in particular seem to provide the best account for when greater self-complexity leads to poorer well-being. Finally, once again no support for the buffering hypothesis was observed. Instead, greater self-complexity uniquely predicted greater depression and greater perceived stress in situations where the buffering hypothesis interaction should have been revealed.

General discussion

Self-complexity theory proposes two hypotheses concerning self-concept organization. The *spillover hypothesis* predicts that those with greater self-complexity will experience relatively weaker affective responses to self-relevant feedback. That is, when one receives positive or negative self-relevant feedback about a particular self-aspect, those who have more self-aspects and less redundant self-aspect features will experience less affective spillover. Indeed, these predictions have been supported in several studies (e.g., Dixon & Baumeister, 1991; Linville, 1985; Niedenthal et al., 1992; Renaud & McConnell, 2002).

A second prediction, the *buffering hypothesis*, posits that those experiencing negative life events will experience fewer negative stress-related outcomes as their self-complexity increases. In other words, having many and relatively diverse self-aspects will minimize the impact of pervasive, on-going stressful events. Indeed, there are studies that provide support for this prediction (e.g., Linville, 1987; Smith & Cohen, 1993). However, some studies have not only failed to find support for the buffering hypothesis but have reported patterns of data that are inconsistent with it (for a review, Rafaeli-Mor & Steinberg, 2002). The current work explored the buffering hypothesis predictions and attempted to identify a moderator that might account for when self-complexity would be differentially beneficial.

We conducted two studies that replicated the design and method of Linville (1987) but found no support for the buffering hypothesis. Instead, the current work found that those greater in self-complexity experienced greater depression, more physical illnesses, greater perceived stress, more negative life events, and lower self-esteem. These findings are not supportive of the buffering hypothesis but are consistent with other work

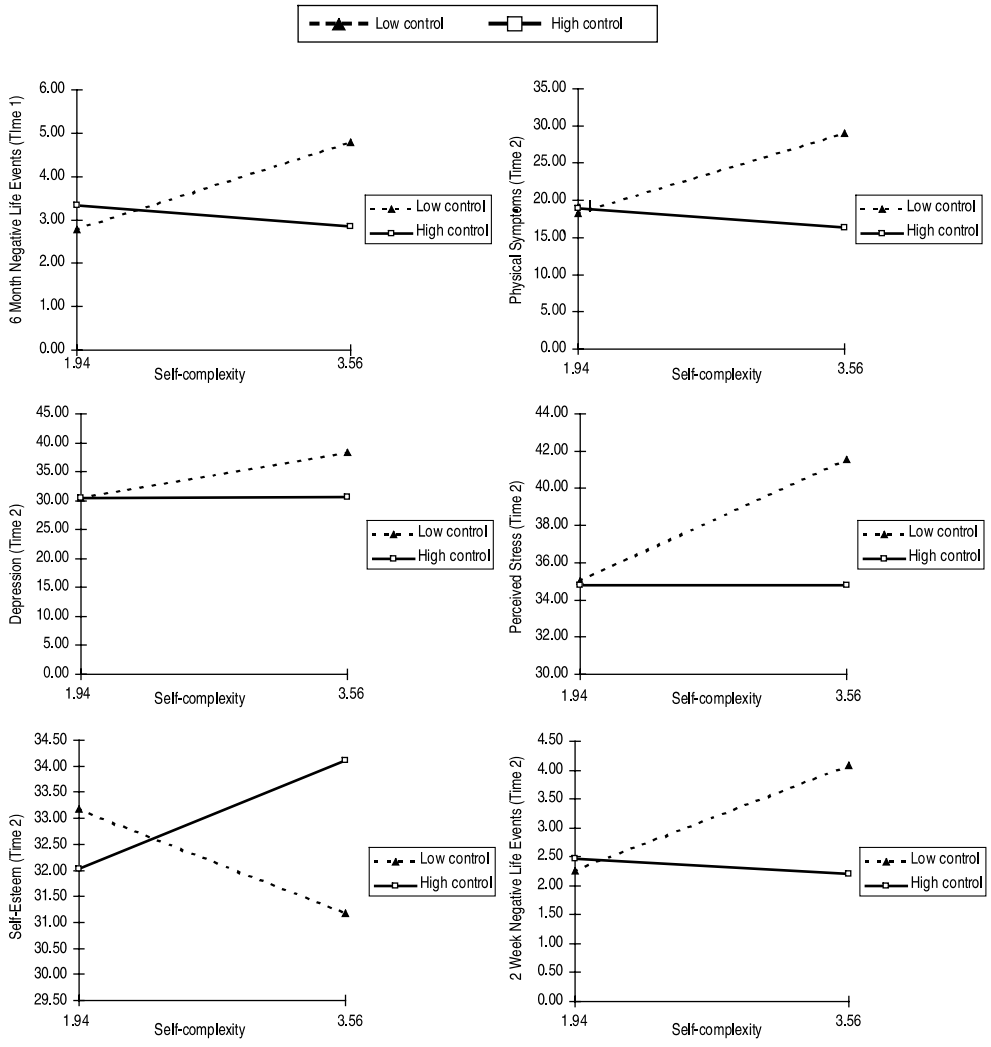

Fig. 2. Interactions between self-aspect control and self-complexity in predicting outcome measures in Study 2.

in the literature (e.g., Rafaeli-Mor & Steinberg, 2002; Woolfolk et al., 1995). To better understand the relation between self-complexity and well-being, the current work explored whether perceptions of control over one's multiple selves would moderate the relation between self-complexity and well-being. We examined self-aspect control because perceptions of control, autonomy, and stability are at the heart of many theories that account for functional behavior and efficacious self-attributions (e.g., Abramson et al., 1978; Bandura, 1997; Glass & Singer, 1972; Langer, 1975; Levine & Ursin, 1980; Ryan & Deci, 2000; Taylor & Brown, 1988, 1994; Weiner, 1986). Greater perceptions of control have been identified as important for efficacious behavior, for resiliency in the face of stressors, and for minimizing learned helplessness and depression, thus we explored whether considering this qualitative dimension of multiple selves would shed light on the consequences of self-complexity. Because self-complexity focuses on the self-aspect as the primary unit of self organization, we examined perceptions of control associated with self-aspects.

Study 1 provided strong support for the self-aspect control hypothesis. Indeed, numerous self-complexity by self-aspect control interactions revealed that having greater self-complexity was more of a liability for those who reported less control over their multiple selves. It is important to note that this was not a main effect of self-aspect control, but rather, its interaction with self-complexity. That is, the relation between less control and poorer well-being was especially strong for those greater in self-complexity. Finally, Study 2 replicated these findings and examined alternative explanations for the self-aspect control hypothesis. Although traumatic life events in one's past, causal uncertainty, and depressive attributional style showed many relations that one would anticipate with the outcome measures, none of them could account for the self-aspect control hypothesis interaction. Thus, it seems that perceptions of control over one's self-aspects in particular best predict

for whom greater self-complexity will be beneficial. The availability of a greater number of less redundant multiple selves will be especially problematic if those many and differentiated self-aspects do not support self-efficacy. Put plainly, all selves are not alike and having more and diverse selves that do not promote one's ability to respond in a self-determined and efficacious fashion has many negative consequences.

The current studies have some important implications for self-complexity research. First, they demonstrated that self-aspect control is an important moderator in determining whether, and for whom, self-complexity is beneficial. Thus, an important boundary condition for self-complexity has been established. Also, the current work suggested that the buffering hypothesis, as originally formulated, may be too broad. Indeed, the current work found that for the average participant in the current work, greater self-complexity was a liability rather than an asset. These results are consistent with others in the literature (Rafaeli-Mor & Steinberg, 2002).

Interestingly, these findings are consistent with data in the clinical literature on self-concept differentiation as well (Block, 1961; Donahue et al., 1993; Sheldon et al., 1997). For instance, Donahue et al. (1993) had undergraduates consider five different domains of their lives (e.g., role as a student, role as a friend) and rate the extent to which a list of 60 traits chosen as markers of the Five Factor Model of personality (McCrae & John, 1992) were descriptive of them in each of those roles. A factor analysis assessed the proportion of variance in each participant's ratings that was shared across roles, and the remaining unaccounted for variance represented the extent to which participants' self-concepts were considered to show greater differentiation. If imported into a self-complexity trait sort task framework, self-concept differentiation is similar to having greater variability in the descriptors used in one's self-aspect groupings. Donahue et al. (1993) found that greater self-concept differentiation was related to poorer well-being. Thus, the findings of Donahue et al. (and those of Sheldon et al., 1997) seem consonant with the current study and those reported by others (e.g., Woolfolk et al., 1995).

Although such a connection may seem warranted, there are some important differences between these two methodologies. For example, an important component of the self-complexity trait sort task methodology is to assess how many different self-aspects participants freely generate. The self-concept differentiation task, on the other hand, gives the same fixed roles to every participant. This difference is especially important when one considers that the H statistic places a heavy emphasis on the number of self-aspects generated. Although H does consider the degree of nonredundancy in the traits among one's self-aspects (similar to the self-concept differentiation approach), H is primarily influenced by the number of self-aspects (in the current studies, the number of self-aspects generated was strongly correlated to H, $rs = .85$–$.89$). Thus, self-complexity and self-concept differentiation are primarily driven by two different features of self-concept representation (number of self-aspects vs. variability in trait usage, respectively). In fact, some work has attempted to measure these components independently (Rafaeli-Mor et al., 1999) and to conceptualize them differently (Schleicher & McConnell, 2003). In addition, it is unclear whether the use of traits specifically chosen as markers of the Five Factor Model of personality is comparable to the more general traits used in self-complexity studies. However, because of the similar findings between the current work, other self-complexity studies (Rafaeli-Mor & Steinberg, 2002), and self-concept differentiation studies, future work should assess the compatibility of methods and the underlying theories between these two literatures to determine the extent to which they can inform each other about a common set of psychological phenomena (e.g., depression, self-esteem). Further, such an exploration may address whether different components of self-concept representation play different roles in successful social functioning.

It is also interesting to note that as self-complexity increased, our participants reported that their self-aspects, on average, were less positive and were less under their own control. We believe this finding illustrates the importance of drawing a distinction between *spillover* and *buffering* effects. In spillover experiments (e.g., Linville, 1985; Renaud & McConnell, 2002), participants receive feedback about one self-aspect (typically, their student self), and this information more strongly affects those who are lower in self-complexity. This feedback probably obeys a relatively straightforward "spread of activation" from the student self to other selves, and to the extent that there are more (and differentiated) selves, the feedback has less impact. However, in buffering studies, rather than studying the implications of feedback about one self-aspect, the focus is on how pervasive negative life events affect many self-aspects. In these cases, spread of activation may be less important than the nature of the selves affected by stress. In fact, juggling many complex (i.e., differentiated) selves may leave one stretched too thin, as the current relations among self-complexity, self-aspect positivity, and self-aspect control show. Thus, variability in self-complexity buffering findings may reflect meaningful *qualitative* differences in multiple selves. The current studies illustrate one such factor: self-aspect control.

Relatedly, an important question is whether buffering findings vary systematically across different subject populations (see Cohen, Payne, & Smith, 1997, for similar concerns). For example, Linville (1987) conducted her studies with Yale undergraduates and found that greater self-complexity was beneficial for those

students facing stress. Perhaps there are qualitative differences between subject populations that influence whether greater self-complexity is beneficial. In our sample, greater self-complexity was related to less positive multiple selves, less self-aspect control, and poorer physical and psychological outcomes, and this was found in two different university settings. Future research should address whether characteristics of different sample populations may account for different results in the literature.

Finally, the current work shows another important implication of perceptions of control for the self. Previous work has found that those who report reduced perceptions of self-control are more prone to anxiety and depression (e.g., Abramson et al., 1978; Averill, 1973; Levine & Ursin, 1980; Seligman, 1975; Thompson et al., 1993), and the current study found that these outcomes were especially likely for those who were greater in self-complexity. Thus, the current study makes the intriguing point that the cognitive representation of one's self-concept may play an important role in how perceptions of self-control are translated into depression, anxiety, and poorer well-being. These findings suggest that researchers who study self-efficacy, self-determination, and self-control can benefit from thinking about how the cognitive representation of self-knowledge may serve as a mechanism through which efficacious functioning occurs.

In sum, the current study found support for the self-aspect control hypothesis but not for the buffering hypothesis. Although intuitively appealing, the buffering hypothesis prediction that greater self-complexity promotes beneficial psychological and physical functioning following stressful events appears to be more complicated than previously acknowledged. The current work found that examining perceptions of control over one's self-aspects improves our understanding of these relations. When perceptions of control over one's multiple selves are low, those greater in self-complexity fared worse than those lower in self-complexity. Moreover, this work suggests that the cognitive representation of the self may play an important role in how perceptions of control lead to well-being. Although future research is needed to more fully understand when, and for whom, greater self-complexity is a burden instead of a blessing, the current work provides a foundation for thinking about important links between self-complexity and literatures that focus on the implications of self-control.

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