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Stability and Change in Achievement Goals

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The present research examined the nature of stability and change in achievement goal endorsement over time, using 4 complementary data-analytic approaches (differential continuity, mean-level change, individual-level change, and ipsative continuity). Three longitudinal studies were conducted in college classrooms; in each study, achievement goals were assessed prior to a series of 3 course examinations. All 3 studies yielded evidence for consistent patterns of both stability and change in each achievement goal under consideration. Fear of failure was linked to greater change in individuals' achievement goal clusters over time. Implications of the present findings for understanding the important and overlooked issue of achievement goal stability and change are discussed.

Keywords: achievement, goal, stability, change, motivation

Individuals encountering an achievement task may focus on several different competence-relevant aims. Achievement motivation theorists have modeled these aims in terms of achievement goals and have posited that such goals may vary with regard to a performance–mastery distinction (Dweck, 1986; Nicholls, 1984) and an approach–avoidance distinction (Elliot, 1997; see Elliot, 2005, for a historically based overview). In the contemporary literature, researchers typically conceptualize achievement goals with regard to both of these distinctions, utilizing either a trichotomous achievement goal framework or a 2 × 2 achievement goal framework. The trichotomous framework is composed of *mastery–approach* goals (focused on attaining task-based or intrapersonal competence; sometimes simply labeled *mastery goals*), *performance–approach* goals (focused on attaining normative competence), and *performance–avoidance* goals (focused on avoiding normative incompetence); the 2 × 2 framework adds *mastery–avoidance* goals (focused on avoiding task-based or intrapersonal incompetence) to the goals of the trichotomous framework.

Achievement tasks are sometimes encountered as a solitary event, but more often than not, they are encountered in sequence. For example, it is commonplace for college students to encounter a series of three or four examinations in their lecture-based courses. Individuals may endorse the same goals across each encounter with the task, or they may vary over time in their goal adoption and pursuit. Although the issue of achievement goal stability and change is clearly important, it has received little empirical attention in the achievement goal literature. In the present research, we seek to address this oversight, focusing primarily on the foundational question of how goal stability and change are assessed and the implications therein for understanding achievement goal regulation.

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Goal Stability and Change

There are clear reasons to expect stability in achievement goal endorsement over time, but there seem to also be equally clear reasons to expect change. One reason to anticipate goal stability lies in the hierarchical nature of achievement motivation (Elliot, 1997). Achievement goals represent concrete aims that emerge from personality characteristics such as achievement motives (Elliot & Church, 1997; Harackiewicz, Barron, & Elliot, 1998) and temperaments (Elliot & Thrash, 2002). In addition, various aspects of the classroom environment, such as the evaluative structure, the frequency of performance evaluation, and the skill of the instructor, also represent stable factors that influence achievement goal adoption (Ames, 1992; Epstein, 1989; Urdan & Turner, 2005). It is important to note that these antecedents of achievement goals remain influential even after the goal has been adopted (see Elliot & Thrash's, 2001, discussion of goal complexes). That is, achievement goals not only emerge from stable factors but remain grounded in these factors throughout the process of goal pursuit and regulation.

Another reason to expect goal stability lies in the nature of the goal construct itself. The goals that individuals adopt when they encounter an achievement task establish a cognitive framework for how they interpret the achievement event, experience task engagement, and respond to competence-relevant information (Ames, 1992; Dweck, 1986). This framework tends to produce "directional" or "biased" perceptual–cognitive processes that likely facilitate continued goal pursuit in a self-fulfilling manner (Elliot & Harackiewicz, 1996; Kunda, 1990). For example, avoidance-based goals are framed in terms of the presence or absence of negative possibilities, which means that avoidance goal pursuit can only produce one of two outcomes: successful avoidance of a negative possibility, or failure to avoid a negative possibility. Neither of these outcomes is likely to provide the positive competence information needed to shift the individual's focus from a negative possibility to a positive possibility and, accordingly, to the adoption of an approach goal.

Although goal stability would be expected on the basis of the aforementioned, there are also reasons to anticipate goal change. Goals represent a form of self-regulation (Bandura, 1986; Locke & Latham, 1990), and optimal self-regulation entails not only endorsing goals prior to task engagement but also monitoring the experience of goal pursuit, evaluating goal progress, and contemplating the need for goal revision (Shah, Kruglanksi, & Friedman, 2003; Wrosch, Scheier, Miller, Schulz, & Carver, 2003; Zimmerman, 1989). Several factors may prompt goal revision. Initial goal adoption may be based on incomplete information about the achievement task or the evaluative environment, and information acquired from additional experience with the task (e.g., difficulty level, interest level) or environment (e.g., harshness of evaluation, stiffness of competition) may lead individuals to adjust their goal endorsement accordingly (Bong, 2005). Likewise, performance feedback may shift individuals' perceptions of competence, which may facilitate a corresponding adjustment in goal adoption (Senko & Harackiewicz, 2005). Life events beyond the achievement context may also alter one's commitment to competence or one's ability to devote resources to the achievement task, with a resultant shift in goal adoption.

Goal change becomes particularly plausible when one considers both the nature of goal adoption and the fact that there are multiple types of change that may take place in an individual's goal commitments. Goal adoption may be conceptualized as a continuous rather than discrete variable. As such, achievement goal adoption need not be an all or none affair, and individuals can endorse many or few. Goal change may therefore be construed in terms of a shift in degree of goal endorsement. Furthermore, as noted by Senko and Harackiewicz (2005), goal change may take place in two different ways: It may represent *goal intensification,* in which an individual increases or decreases commitment to a single goal, or it may represent *goal switching,* in which an individual shifts commitment from one type of goal to another. From a multiple goals perspective (Barron & Harackiewicz, 2001; Pintrich, 2000), change may also be considered more broadly with regard to shifts within a person's cluster of goals.

Given that compelling reasons exist to expect both goal stability and goal change, we posit that it is best to view this question not in terms of either stability *or* change but in terms of both stability *and* change. That is, achievement goal endorsement is likely to be stable to some degree, but it is also likely to exhibit change across time. Are some types of achievement goals more stable or malleable than others? The reasons reviewed above regarding goal stability and change seem applicable to all achievement goals. That is, mastery–approach, performance–approach, mastery–avoidance, and performance–avoidance goals alike are grounded in personality dispositions, are responsive to objective (i.e., consensual) environmental characteristics, and establish a perceptual framework that is likely to be self-perpetuating, yet each of these goals also represents concrete cognitive aims that individuals use to regulate their ongoing motivation in a context of shifting perceptions and experiences. As such, we do not expect the degree of stability and change to differ among the various achievement goals. However, we are open to the possibility that different achievement goals may manifest different patterns of change over time (e.g., increases or decreases, increases or decreases early in the achievement sequence only, or increases or decreases throughout the achievement sequence). Given the numerous possible patterns of change and the limited knowledge available at present, we made no a priori predictions regarding the patterns of change for different achievement goals.

Measurement of Goal Stability and Change

The extant literature on achievement goal stability and change is limited in two important ways. First, only a handful of articles focusing explicitly on the issue of goal stability and change have been published. Of these, some have examined shifts in goal endorsement for school across the elementary to middle school transition (e.g., E. M. Anderman & Midgley, 1997; L. H. Anderman & Anderman, 1999); some have examined shifts in goal endorsement for school within a school year (e.g., Bong, 2005; Seifert, 1996); and only one article, that by Senko and Harackiewicz (2005), has addressed the central question of the present research—stability and change in achievement goals across a sequence of similar tasks. Issues regarding goal stability over educational transitions and varying tasks are of great importance to educational research and practice. However, by focusing our research question on competence-relevant tasks throughout a continuous educational environment, we aim to limit the influences of varying contexts and tasks and, in so doing, provide a detailed characterization of goal stability and change that is relatively separate from these additional influences. Second, to date, achievement goal stability and change have been primarily investigated with two indexes: differential continuity and mean-level change. Two additional indexes of stability and change—individual-level change and ipsative continuity—have been used in other areas of psychology (see Roberts, Caspi, & Moffitt, 2001) and have been shown to yield information that is independent of that provided by differential continuity and mean-level change. Each of the aforementioned indexes yields somewhat different yet complementary data on the question of stability and change, and the combined use of all four indexes should provide a more accurate and complete assessment of stability and change. In the following, we review each of the four approaches to stability and change and, when applicable, review the existing research in the achievement goal literature.

Differential Continuity

Differential continuity represents the level of rank-order consistency maintained in a construct over time within a sample. It is the most common type of analysis used to assess stability and change, and it is measured with a Pearson product–moment correlation. In the achievement goal literature, differential continuity has been explicitly examined in a few studies (E. M. Anderman & Midgely, 1997; L. H. Anderman & Anderman, 1999; Bong, 2005; Meece & Miller, 2001; Seifert, 1996; Senko & Harackiewicz, 2005), and pertinent information may be extracted from other studies that addressed other research questions (Elliot & McGregor, 2001; Middleton, Kaplan, & Midgely, 2004; Stipek & Gralinski, 1996; Wolters, Yu, & Pintrich, 1996). Nearly every correlation coefficient reported in these studies has been significant and positive, and often these correlations are of moderate to high magnitude. Although it might be tempting to conclude that the presence of moderate to high rank-order stability rules out the possibility of change, this conclusion would be premature, as differential continuity is often completely unrelated to other indexes of stability and change (Block, 1971).

Mean-Level Change

Mean-level change represents the degree to which the average amount of a construct changes over time within a sample. This type of stability and change is also commonly analyzed, and it is typically measured with a paired-samples *t* test. This index moves beyond rank-order stability by providing information regarding the absolute amount of change in a construct across multiple assessments, and it is not uncommon for there to be a high degree of differential continuity and considerable mean-level change within the same sample (Gottfried, Fleming, & Gottfried, 2001; Roberts & Pomerantz, 2004). Statements can be made about the presence of mean-level change in the sample after longitudinal factorial invariance has been demonstrated (Meredith, 1993; Meredith & Horn, 2001).

In the achievement goal literature, each of the studies that have explicitly examined differential continuity has also examined mean-level change (E. M. Anderman & Midgely, 1997; L. H. Anderman & Anderman, 1999; Bong, 2005; Meece & Miller, 2001; Seifert, 1996; Senko & Harackiewicz, 2005). The results from these studies are quite variable, and it is difficult to know how to interpret this variability for several reasons. First, achievement goals have been operationalized quite differently by different investigators, which is likely to introduce additional variability in stability and change. For example, goals characterized as dispositional orientations are concerned with how one evaluates and pursues competence across situations, whereas goals characterized as task specific are concerned with how one evaluates and pursues competence with regard to a particular achievement event; dispositional orientations are likely to result in greater stability than task-specific goals. Second, the performance-based goal measures used in some published studies have been an amalgam of performance–approach and performance–avoidance goal items; goal measures that separate approach and avoidance items into discrete goal constructs are likely to evidence greater change than goal measures that do not, because the former provide much more precision of measurement than the latter. Third, the context in which goal stability and change have been examined is quite variable, with some researchers looking at stability and change across academic transitions, others looking within a single school year, and still others looking more specifically within a sequence of similar tasks; the more variable the context is, the more change can be expected. Fourth, the age of participants varies considerably across existing studies (ranging from elementary school students to college students), and some investigators have posited that goal adoption processes differ at different age groups (Pajares & Cheong, 2003).

Individual-Level Change

Individual-level change represents the magnitude of increase or decrease in a construct over time exhibited by an individual. Differential continuity and mean-level change examine stability and change at the level of the sample, whereas individual-level change examines stability and change at the level of the single person within the sample. Sample-level stability and change can be and often are unrelated to person-level stability and change (Roberts, Walton, & Viechtbauer, 2006). For example, the absence of mean-level change for a particular achievement goal at the sample level may mask the fact that the goal increased for a sizable number of individuals but decreased for a comparable number of persons, thus canceling out any overall change. In similar fashion, substantial differential continuity can be present for an achievement goal at the sample level, while considerable change is apparent at the person level. This type of stability and change has received considerable attention in the clinical psychology literature (Jacobson & Truax, 1991) and has received a moderate amount of attention in the personality psychology literature (Robins, Fraley, Roberts, & Trzesniewski, 2001) but has otherwise been largely overlooked; research in the achievement goal literature has focused almost exclusively on sample-level analyses (but see Conroy, Elliot, & Hofer, 2003).

We focus on the reliable change index (RCI; Christensen & Mendoza, 1986; Jacobson & Truax, 1991) to examine individual-level change. One measures the RCI by dividing the difference in Time 1 (T1) and Time 2 (T2) scores by the standard error of the difference score. The standard error of the difference score represents the spread of the distribution of change scores that would be expected if no change has occurred. The RCI allows individual participants to be categorized as showing a significant increase, a significant decrease, or no significant change from T1 to T2. RCI values smaller than -1.96 or larger than 1.96 are unlikely to occur by chance and are thus considered indicative of reliable change. Researchers may also aggregate these data to make summary statements about reliable change within the sample of individuals as a whole. In particular, if change is random, the distribution of RCI values should be normal, with approximately 2.5% of values below -1.96, approximately 2.5% of values above 1.96, and approximately 95% of values between -1.96 and 1.96.

Ipsative Continuity

Ipsative continuity represents the level of stability and change exhibited in an individual's configuration of constructs over time. This type of stability and change has received a moderate amount of attention in the personality psychology literature (Ozer, 1993) but has been largely overlooked in other relevant literatures. Ipsative continuity can be conceptualized as having three components: elevation (the level of profile scores), shape (the pattern of profile scores), and scatter (the variability of profile scores). Both shape and scatter are relevant to the current investigation of goal stability and change; these are referred to herein as *profile consistency* and *profile dispersion,* respectively.

To measure changes in profile shape, we used within-person correlations, also known as Q correlations (Cronbach & Gleser, 1953; Stephenson, 1952). This is similar to a Pearson product–moment correlation, but it focuses on the person level rather than the sample level and on configurations of constructs rather than single constructs. Profile consistency coefficients can be positive or negative. A large positive coefficient indicates that the individual's configuration of constructs has been highly stable over time, whereas a small positive or negative coefficient indicates that alteration to a person's configuration has occurred; a large negative correlation indicates that the initial ordering of the constructs within the individual has become inverted. One may also aggregate profile consistency data to make summary statements about ipsative continuity within the sample of individuals as a whole.

To measure changes in profile scatter, we used changes in within-person standard deviations to determine the variability of goal endorsement over each time point comparison. A positive scatter coefficient indicates that profile dispersion increases over time, whereas a negative scatter coefficient indicates that profile dispersion decreases over time. The magnitude of the coefficient suggests the extent of the dispersion.

Differential continuity, mean-level change, and individual-level change all examine stability and change that occur within a single construct, unlike ipsative continuity, which examines stability and change within a cluster of constructs. Accordingly, ipsative continuity can contribute completely unique, independent data to the question of achievement goal stability and change. As with individual-level change, ipsative continuity has yet to be examined in the achievement goal literature.

One additional consideration regarding both types of person-level change (individual-level change and ipsative continuity) is that this type of stability and change may itself be predicted by dispositional characteristics of the person (Asendorpf & van Aken, 1991; Roberts et al., 2001). That is, some persons may exhibit more or less person-level change than others, and this information can shed further light on the process of stability and change in a given construct.

The Present Research

The present research is composed of three studies that examine achievement goal stability and change using all four of the aforementioned indexes. These four indexes are thought to provide complementary and essentially comprehensive data on stability and change (Roberts et al., 2001). Accordingly, our research promises to yield a deeper and more precise knowledge of achievement goal stability and change than that currently available. Differential continuity and ipsative continuity were hypothesized to provide evidence of goal stability, whereas mean-level change and individual-level change were hypothesized to provide evidence of goal change. In addition to examining achievement goal stability and change per se, we also investigate whether individual differences exist in the degree to which achievement goal stability and change are exhibited. We commence exploration of this intriguing issue by focusing on fear of failure, an individual difference that has been shown to be integrally involved in the process of achievement goal adoption (Conroy & Elliot, 2004; Elliot & Church, 1997).

Study 1

In Study 1, students' achievement goals were assessed prior to each of three exams in a college course, and the differential continuity, mean-level change, individual-level change, and ipsative continuity of their goal endorsements were examined. The trichotomous achievement goal framework was utilized in this study.

Method

One hundred eighty-eight (120 female, 68 male) undergraduates from an introductory-level psychology class participated in exchange for extra course credit. The mean age of participants was 20.0 years, with a range of 17–40 years. The ethnicity of participants was as follows: 68.1% Caucasian, 10.6% Asian, 9.6% African American, 3.2% Hispanic, 1.1% Native American, 5.3% other ethnicities, and 2.1% who did not report ethnicity. (The data for this study were collected in the context of a larger project; Elliot, McGregor, & Gable, 1999; none of the focal results reported in the present research has been reported in any prior work.)

The class in which the data were collected was conducted in lecture format. Evaluation was based on three noncumulative exams (approximately 5 weeks apart) and a normative grading structure. One week before each exam, participants completed a measure of achievement goals for the upcoming exam.

Elliot and Church's (1997) 18-item Achievement Goal Questionnaire was used to measure achievement goals. In the questionnaire, 6 items each assess mastery–approach goals (e.g., "I want to learn as much as possible during this section of the class"), performance–approach goals (e.g., "It is important for me to do better than other students on this exam"), and performance–avoidance goals (e.g., "I just want to avoid doing poorly on this exam"). Participants responded to the items on a scale that ranged from 1 *(not at all true of me)* to 7 *(very true of me).*

Results and Discussion

Differential continuity. We used Pearson product–moment correlations to examine differential continuity in achievement goal endorsement across the three time points. Table 1 lists these correlations (as well as Cronbach's alphas and intercorrelations among the goals within each time point), which consistently indicate a high level of stability for each of the three goals. The average goal correlation across all time points was .72, and correlations ranged from .59 to .85. We examined gender differences by comparing differential continuity coefficients using an r-to-z transformation (Blalock, 1972). Men ($r = .91$) showed higher differential continuity than women ($r = .82$) for performance–approach goals between T2 and Time 3 (T3; $z = 1.97$, $p < .05$); no significant gender differences were observed for any other goal over any other time point comparison.

Mean-level change. Structural stability needs to be tested before any mean-level changes can be interpreted, because it is critical to know that the construct of interest is measured consistently across occasions. We did this using confirmatory factor analysis to compare the fit indexes for a series of four nested models with increasing constraints: configural invariance (constraints only on the factor variances), weak factorial invariance (additional constraints on the item–factor regression coefficients), strong factorial invariance (additional constraints on the item intercepts), and strict factorial invariance (additional constraints on uniquenesses across measurement occasions). In this type of analysis, fit indexes are compared between models, and a significant reduction in model fit indicates that the model with fewer constraints should be selected (Conroy et al., 2003). Strong factorial invariance is considered to be sufficient for the comparison of scores across time points (Sayer & Cumsille, 2001).

We observed no significant decreases in model fit when we added the constraints of the weak invariance model, $\Delta\chi^2(30) = 27.06$, $p = .62$, or the strong invariance model, $\Delta\chi^2(12) = 13.16$, $p = .36$; we only observed a significant decrease in model fit when

Table 1
Study 1: Intercorrelations and Reliabilities

Goal and time	1	2	3	4	5	6	7	8	9
1. MAP goals, T1	.85								
2. PAP goals, T1	.14	.93							
3. PAV goals, T1	−.08	.24**	.80						
4. MAP goals, T2	**.67******	.22**	.02	.83					
5. PAP goals, T2	.12	**.78******	.20*	.26**	.93				
6. PAV goals, T2	−.10	.19*	**.71******	−.12	.14	.80			
7. MAP goals, T3	**.59******	.11	−.02	**.67******	.08	−.11	.86		
8. PAP goals, T3	.03	**.74******	.12	.17*	**.85******	.10	.16	.94	
9. PAV goals, T3	−.15	.17*	**.68******	−.11	.14	**.81******	−.06	.17*	.78

Note. Internal consistency estimates are presented along the diagonal. Differential continuity coefficients are in boldface. MAP = mastery–approach; T = time; PAP = performance–approach; PAV = performance–avoidance.
* $p < .05$. ** $p < .01$. *** $p < .001$.

we added the constraints of the strict invariance model, $\Delta\chi^2(36) = 70.35$, $p < .001$. Thus, strong factorial invariance was documented in the analysis, and any changes in scores over time can therefore be interpreted as true change instead of measurement error. Paired *t* tests were used to calculate mean-level change in achievement goal endorsement for the three time point comparisons. Table 2 lists the means, standard deviations, *t* values, and Cohen's *d* effect sizes from these analyses. Bonferroni adjustments were made within each goal to adjust for the possibility of inflated Type I error.

Mastery–approach goals decreased significantly between T1 and T2, whereas performance–avoidance goals showed a significant increase between T1 and T2; neither goal changed significantly between T2 and T3. Endorsement of performance–approach goals did not change significantly between any time points. To examine gender differences in mean-level change, we conducted a repeated-measures analysis of variance with gender as a covariate for each goal over each time point comparison; no significant gender differences in mean-level change were observed.

Individual-level change. We calculated RCIs to determine whether individual participants showed reliable changes in goal endorsement between time points. Table 3 lists the percentages of participants who showed a reliable decrease, a reliable increase, or no reliable change for each of the three time point comparisons. When aggregated over the entire sample, each of the three achievement goals showed a pattern of change significantly different from what would be expected if change were random. Participants tended to show a decrease in mastery–approach goals for each time period and an increase in performance–avoidance goals, particularly from T1 to T2; approximately the same number of participants showed an increase in performance–approach goal endorsement as showed a decrease across each time period. To test for gender differences in individual-level change, we recoded the RCI to reflect the presence of reliable change in either direction and then cross-tabulated these scores with gender (Roberts et al., 2001). No significant gender differences in individual-level change were observed for any goal over any time point comparison.

The percentage of participants who showed any reliable change (increase or decrease) on different numbers of goals (i.e., reliable change on all three goals through reliable change on none of the goals) may also be considered. A majority of participants showed reliable change on all three goals between the first two time points (three goals: 73.8%; two goals: 22.6%; one goal: 3.6%; no goals: 0.0%), between the second two time points (three goals: 63.5%; two goals: 29.7%; one goal: 6.8%; no goals: 0.0%), and between the first and last time points (three goals: 67.6%; two goals: 24.3%; one goal: 7.4%; no goals: 0.7%). It is noteworthy that nearly every participant showed reliable change on at least one goal over each time point comparison.

Ipsative continuity. We estimated profile consistency (shape) coefficients by correlating each individual's scores on all three achievement goals over each of the three time point comparisons. Overall, the mean profile consistency coefficients were high (T1–T2: .76; T2–T3: .76; T1–T3: .68), as were the medians for the sample (T1–T2: .92; T2–T3: .96; T1–T3: .90). However, the profile consistency coefficients also displayed a substantial range

Table 2
Study 1: Descriptive Statistics and Mean-Level Change

Goal type	T1		T2		T3		T1 to T2		T2 to T3		T1 to T3	
	M	*SD*	*M*	*SD*	*M*	*SD*	*t*	*d*	*t*	*d*	*t*	*d*
MAP	33.23	5.17	31.04	5.15	30.07	6.41	$t(167) = 6.96^{***}$	0.54	$t(147) = 2.05$	0.17	$t(147) = 7.39^{***}$	0.61
PAP	24.34	9.31	24.00	9.51	23.66	9.91	$t(167) = 0.82$	0.06	$t(147) = 0.59$	0.05	$t(147) = 1.35$	0.11
PAV	22.24	7.98	24.04	7.44	23.85	7.41	$t(167) = -3.80^{***}$	−0.29	$t(147) = -0.27$	−0.02	$t(147) = -3.41^{***}$	−0.28

Note. Degrees of freedom vary because of missing data. T = time; MAP = mastery–approach; PAP = performance–approach; PAV = performance–avoidance.
*** $p < .001$.

Table 3
Study 1: Reliable Change in Achievement Goal Endorsement

Goal type	T1–T2				T2–T3				T1–T3			
	% dec	% same	% inc	$\chi^2(2)$	% dec	% same	% inc	$\chi^2(2)$	% dec	% same	% inc	$\chi^2(2)$
MAP	68.5	8.9	22.6	3,326.0*	46.6	14.2	39.2	2,051.1*	64.2	10.8	25.0	2,663.0*
PAP	46.4	14.3	39.3	2,321.3*	43.2	14.2	42.6	2,034.9*	45.9	20.3	33.8	1,783.8*
PAV	38.7	6.5	54.8	2,853.9*	45.3	14.9	39.9	2,009.5*	38.5	10.1	51.4	2,292.8*

Note. T = time; dec = decrease; inc = increase; MAP = mastery–approach; PAP = performance–approach; PAV = performance–avoidance.
* $p < .05$.

for each time point comparison (T1–T2: −1.00 to 1.00; T2–T3: −1.00 to 1.00; T1–T3: −.91 to 1.00), and a notable minority of participants evidenced negative profile consistency (T1–T2: 5.4%; T2–T3: 7.7%; T1–T3: 10.2%). No significant gender differences in profile consistency were observed.

To test the significance of the shape coefficients, we used the dual-hypothesis testing method offered by Conroy and Pincus (2006). This strategy involves testing whether the sample of coefficients differs both from zero (no-effect null hypothesis) and what would be expected by chance alone (chance-effect null hypothesis). The rejection of both null hypotheses would allow us to conclude that an effect of stability exists in this sample but also that the observed effect is not simply an artifact due to repeated measurements of the same construct. The no-effect null hypothesis was rejected for each time point comparison: T1–T2, $t(167) = 24.23$, $p < .001$; T2–T3, $t(147) = 22.07$, $p < .001$; T1–T3, $t(147) = 18.42$, $p < .001$. This indicated that the average level of profile consistency observed in this sample over each time point comparison was significantly different from zero.

To test the chance-effect null hypothesis, we generated new samples by randomly pairing data from a participant at one time point with data from another participant at the second time point. As such, we created the bootstrapped samples by using only the observed data—no new data were generated for this purpose, and the bootstrapped samples contained the same number of participants as the observed data. We generated 1,000 randomly paired samples for each time point comparison (Gurtman, 2001), and we compared the mean of these samples with the mean of the shape coefficients observed for each time point. (We removed 41 cases from the data used to create the randomly paired bootstrapped samples because of missing data at any time point.) The sample means of the observed shape coefficients were much higher than the means of the bootstrapped shape coefficients (T1–T2: $M = .30$, $SD = .044$; T2–T3: $M = .18$, $SD = .049$; T1–T3: $M = .24$, $SD = .044$). The chance-effect null hypothesis was also rejected for each time point comparison (T1–T2: $z = 10.45$, $p < .001$; T2–T3: $z = 11.84$, $p < .001$; T1–T3: $z = 10.00$, $p < .001$), indicating that the average level of profile consistency observed in this sample over each time point comparison was significantly different from what would be expected by chance alone.

We estimated profile dispersion (scatter) coefficients by computing the standard deviation for each individual's scores within a time point and subtracting the data for the initial time point from the data for the subsequent time point over each of the three time point comparisons. Overall, the mean profile dispersion was small (T1–T2: −1.06; T2–T3: 0.21; T1–T3: −0.81), but the data showed a substantial range (T1–T2: −17.46 to 8.88; T2–T3: −7.76 to 10.10; T1–T3: −13.09 to 10.26). No significant gender differences in profile dispersion were observed.

We tested the significance of the observed scatter by a randomized-pair bootstrapping technique, as with the tests for shape. The mean differences in scatter over time were identical for each of the 1,000 randomly paired bootstrapped samples (because of the associative property of mathematical operations). As such, we compared the standard deviation of the scatter of the bootstrapped samples with the standard deviation of the scatter in the observed data. We found that the variability in scatter was significantly lower in the observed samples (T1–T2: 3.75; T2–T3: 2.86; T1–T3: 3.61) than in the bootstrapped samples (T1–T2: 5.79; T2–T3: 5.57; T1–T3: 5.72) for each time point comparison (T1–T2: $z = -8.33$, $p < .001$; T2–T3: $z = -11.73$, $p < .001$; T1–T3: $z = -8.98$, $p < .001$). This indicates that the observed scatter was less than what would have been expected by chance alone, allowing us to reject the chance-effect null hypothesis and providing further evidence of within-person goal stability.

In sum, the results of this study provide evidence of both stability and change in achievement goals over time. In accord with previous research, the differential continuity results indicate a high level of stability in achievement goal adoption over the three exam periods. However, the mean-level change results provide evidence of malleability in goal endorsement as well. The strongest shifts were between the first and second time points. Mastery–approach goals decreased from T1 to T2 and showed a strong tendency (not quite significant after Type I error adjustment) to decrease from T2 to T3, but the effect size for the first interval was much larger than that for the second interval. Furthermore, for performance–avoidance goals, significant change was present for the first time interval only. Performance–approach goals were the only type of goal to exhibit mean-level stability across all time points. The individual-level change results extend the mean-level change results. For mastery–approach and performance–avoidance goals, the results are similar across the two types of analysis, but for performance–approach goals the results are quite different. The individual-level change results show approximately equal amounts of reliable increase and decrease in performance–approach goals over time; this substantial change could not be identified in the mean-level change analyses, because the decreases and increases at the person level canceled each other out when combined at the sample level. Every participant showed reliable change on at least one goal. The ipsative continuity results provide additional evidence of goal stability, in that they indicate greater consistency and reduced dispersion when compared with randomly paired bootstrapped samples. However, sizable ranges were observed for both profile consistency (shape) and profile dispersion (scatter), which suggests that other characteristics of the person or the environment may contribute to the observed variability.

Study 2

Study 2 had two aims. The first aim was to examine the robustness of the Study 1 results. The second aim was to test fear of failure as a personality characteristic that might predict variation in ipsative continuity.

Fear of failure is an achievement motive that represents a dispositional tendency to seek to avoid failure in evaluative settings (Atkinson & Feather, 1966; Birney, Burdick, & Teevan, 1969). Developmentally, fear of failure has been linked to parental socialization practices, such as global-level negative statements and love withdrawal after failure (Elliot & Thrash, 2004). Persons who are high in fear of failure appear to have learned to define failure as a general indicator of incompetence that puts them at risk of rejection by significant others and to construe success (which is viewed as nonfailure) as a means to acquiring love and respect (Conroy, 2003; Elliot & Reis, 2003; McGregor & Elliot, 2005). Self-esteem is highly unstable for such individuals, as their deep sense of value and worth rests in contingent fashion on each competence-relevant outcome (see also Kernis & Goldman, 2003). Given that their self-esteem is on the line in achievement settings, it is not surprising that persons who are high in fear of failure are highly reactive to competence evaluation. They are particularly reactive to failure experiences, because such experiences evoke global derogation of the self and concerns about rejection, but they are also reactive to success experiences, because such experiences reinforce the sense that acceptance and worth must be earned (McGregor & Elliot, 2005).

Fear of failure has been documented as an important predictor of the achievement goals that individuals adopt on first encountering an achievement task (Conroy & Elliot, 2004; Elliot & Church, 1997). Given the reactivity of high fear of failure individuals to achievement outcomes, we posit that fear of failure is also an important predictor of change in individuals' goals from one achievement event to the next. That is, we posit that the emotional reactivity of those who are high in fear of failure will translate into self-regulatory reactivity in the form of greater change in achievement goals following performance feedback. Perceived failure is likely to lead to a reconfiguration of goal pursuit designed to ensure that the shameful event does not reoccur, and perceived success may likewise impel a shift in goals designed to further ensure positive outcomes that can earn favor and worth. If the influence of fear of failure on goal change is extremely strong, it may be possible to detect it at the level of each individual goal. However, given that there are undoubtedly many person- and situation-based factors that influence goal stability and change, it may be the case that the influence of fear of failure will not be powerful enough to be detected in each goal but may nevertheless be witnessed in individuals' overall goal configurations.

Method

Two hundred eleven (127 female, 82 male, 2 who did not report gender) undergraduates from an introductory-level psychology class participated in exchange for extra course credit. The mean age of participants was 20.3 years, with a range of 17–36 years. The ethnicity of participants was as follows: 71.6% Caucasian, 9.0% Asian, 8.5% Hispanic, 5.2% African American, 3.8% other ethnicities, and 1.9% who did not report ethnicity. (The data for this study were collected in the context of a larger project; Elliot & McGregor, 1999; none of the focal results reported in the present research has been reported in any prior work.)

The class in which the data were collected was conducted in lecture format. Evaluation was based on three noncumulative exams (approximately 5 weeks apart) and a normative grading structure. At the beginning of the semester, participants completed a measure of fear of failure. One week before each exam, participants completed a measure of achievement goals for the upcoming exam.

Herman's (1990) 27-item measure (e.g., "I try to avoid failure at all costs") was used to assess fear of failure. Participants responded to each item on a scale ranging from 1 *(strongly disagree)* to 5 *(strongly agree).* Previous research attests to the reliability and validity of this measure (Elliot & Church, 1997). Elliot's (1999) 18-item Achievement Goal Questionnaire was used to measure achievement goals for the upcoming exam. This questionnaire is the same as that used in Study 1, with the exception that the item "I wish this exam was not graded" was replaced with "My goal for this exam is to avoid performing poorly." Participants responded to each item on a 1 *(not at all true of me)* to 7 *(very true of me)* scale.

Results and Discussion

Differential continuity. Pearson product–moment correlations were used to examine differential continuity in achievement goal endorsement across the three time points. Table 4 lists these correlations (as well as Cronbach's alphas and intercorrelations among the goals within each time point), which uniformly indicate a high level of stability for each of the three goals. The average goal correlation across all time points was .76, and correlations ranged from .65 to .82. No significant gender differences were observed for any goal over any time point comparison.

Mean-level change. As in Study 1, strong factorial invariance was documented in the analysis. We observed no significant decreases in model fit when we added the constraints of the weak invariance model, $\Delta\chi^2(30) = 17.18$, $p = .97$, or the strong invariance model, $\Delta\chi^2(12) = 10.66$, $p = .56$; we only observed a significant decrease in model fit when we added the constraints of the strict invariance model, $\Delta\chi^2(36) = 100.61$, $p < .001$. Thus, any changes in scores over time can be interpreted as true change instead of measurement error. Paired *t* tests were used to calculate mean-level change in achievement goal endorsement for the three time point comparisons. Table 5 lists the means, standard deviations, *t* values (significance values adjusted for Type I error), and Cohen's *d* effect sizes from these analyses.

The results are essentially identical to those from Study 1. Mastery goals decreased significantly at each time point, whereas performance–avoidance goals showed a significant increase between T1 and T2 but not between T2 and T3. Again, endorsement of performance–approach goals did not change significantly between any time points. One gender difference in mean-level change was observed: Performance–approach goal endorsement

Table 4
Study 2: Intercorrelations and Reliabilities

Goal and time	1	2	3	4	5	6	7	8	9	10
1. MAP goals, T1	.90									
2. PAP goals, T1	.05	.91								
3. PAV goals, T1	−.01	.30***	.84							
4. MAP goals, T2	**.72*****	.00	−.06	.90						
5. PAP goals, T2	.05	**.81*****	.21**	.21**	.92					
6. PAV goals, T2	.01	.21**	**.75*****	.00	.22**	.87				
7. MAP goals, T3	**.65*****	−.05	−.06	**.82*****	.10	−.05	.88			
8. PAP goals, T3	.01	**.77*****	.22**	.12	**.81*****	.16*	.14	.92		
9. PAV goals, T3	−.07	.18*	**.70*****	−.09	.15*	**.79*****	−.12	.19**	.85	
10. Fear of failure	−.18*	.36***	.42***	−.24**	.20**	.40***	−.22**	.23**	.42***	.86

Note. Internal consistency estimates are presented along the diagonal. Differential continuity coefficients are in boldface. MAP = mastery–approach; T = time; PAP = performance–approach; PAV = performance–avoidance.
* $p < .05$. ** $p < .01$. *** $p < .001$.

increased for men more than women between the first two time points, $F(1, 186) = 6.15$, $p < .05$.

Individual-level change. We calculated RCIs to determine whether individual participants showed reliable changes in goal endorsement between time points. Table 6 lists the percentages of participants who showed a reliable decrease, a reliable increase, or no reliable change for each of the three time point comparisons. When aggregated over the entire sample, each of the three achievement goals showed a pattern of change significantly different from what would be expected if change were random. As in Study 1, participants tended to show a decrease in mastery–approach goals for each time period and an increase in performance–avoidance goals, particularly from T1 to T2; approximately the same number of participants showed an increase in performance–approach goal endorsement as showed a decrease across each time period. One gender difference in individual-level change was observed: Men showed more reliable change than women for mastery–approach goals between T1 and T2 ($\phi = .15$, $p < .05$).

In accord with Study 1, a majority of participants showed reliable change on all three goals between the first two time points (three goals: 76.1%; two goals: 19.1%; one goal: 4.8%; no goals: 0.0%), between the second two time points (three goals: 73.3%; two goals: 24.1%; one goal: 2.7%; no goals: 0.0%), and between the first and last time points (three goals: 76.8%; two goals: 20.4%; one goal: 2.8%; no goals: 0.0%). Every participant showed reliable change on at least one goal over each time point comparison. We used Pearson product–moment correlations to examine the relation between fear of failure and absolute values of the continuous reliable change scores (prior to categorizing as increasing, decreasing, or not showing reliable change; higher numbers reflect greater change in either direction). Reliable change was not significantly predicted by fear of failure for any achievement goal over any time point comparison.

Ipsative continuity. We estimated profile consistency (shape) coefficients by correlating each individual's scores on all three achievement goals over each of the three time point comparisons. (One participant endorsed a goal profile with no variability at T2; no ipsative continuity coefficients were computed for that participant for either of the affected time point comparisons.) Overall, the mean profile consistency coefficients were high (T1–T2: .73; T2–T3: .79; T1–T3: .72), as were the medians for the sample (T1–T2: .95; T2–T3: .97; T1–T3: .93). However, the profile consistency coefficients also displayed a substantial range for each time point comparison (T1–T2: −1.00 to 1.00; T2–T3: −.99 to 1.00; T1–T3: −1.00 to 1.00), and a notable minority of participants evidenced negative profile consistency (T1–T2: 9.1%; T2–T3: 6.5%; T1–T3: 8.3%). No significant gender differences in profile consistency were observed.

As in Study 1, the no-effect null hypothesis was rejected for each time point comparison: T1–T2, $t(186) = 21.02$, $p < .001$; T2–T3, $t(185) = 24.79$, $p < .001$; T1–T3: $t(180) = 20.98$, $p < .001$. This indicated that the average level of profile consistency observed in this sample over each time point comparison was significantly different from zero. To test the chance-effect null hypothesis, we used the randomly paired bootstrapping procedure from Study 1. (We removed 30 cases from the data used to create

Table 5
Study 2: Descriptive Statistics and Mean-Level Change

Goal type	T1		T2		T3		T1 to T2		T2 to T3		T1 to T3	
	M	*SD*	*M*	*SD*	*M*	*SD*	*t*	*d*	*t*	*d*	*t*	*d*
MAP	33.26	5.64	31.53	6.28	30.79	6.18	$t(187) = 4.79^{***}$	0.35	$t(186) = 2.81^{**}$	0.21	$t(180) = 6.50^{***}$	0.48
PAP	25.18	9.16	25.63	9.36	25.57	9.22	$t(187) = -1.68$	−0.12	$t(186) = 0.00$	0.00	$t(180) = -1.20$	−0.09
PAV	22.44	8.24	24.36	8.66	24.11	8.33	$t(187) = -4.59^{***}$	−0.34	$t(186) = -0.16$	−0.01	$t(180) = -4.11^{***}$	−0.31

Note. Degrees of freedom vary because of missing data. T = time; MAP = mastery–approach; PAP = performance–approach; PAV = performance–avoidance.
** $p < .01$. *** $p < .001$.

Table 6
Study 2: Reliable Change in Achievement Goal Endorsement

Goal type	T1–T2				T2–T3				T1–T3			
	% dec	% same	% inc	$\chi^2(2)$	% dec	% same	% inc	$\chi^2(2)$	% dec	% same	% inc	$\chi^2(2)$
MAP	59.0	11.7	29.3	3,079.8*	50.8	10.7	38.5	2,854.6*	65.2	7.7	27.1	3,427.9*
PAP	39.9	8.5	51.6	3,012.2*	49.2	9.1	41.7	2,926.5*	42.5	8.8	48.6	2,842.1*
PAV	35.6	8.5	55.9	3,114.3*	41.7	9.6	48.7	2,887.6*	31.5	9.4	59.1	3,068.9*

Note. T = time; dec = decrease; inc = increase; MAP = mastery–approach; PAP = performance–approach; PAV = performance–avoidance.
* $p < .05$.

the randomly paired bootstrapped samples because of missing data at any time point, and we removed 1 case because of a lack of variance over any two time points.) The sample means of the observed ipsative coefficients were again much higher than the means of the bootstrapped ipsative coefficients (T1–T2: $M = .24$, $SD = .037$; T2–T3: $M = .15$, $SD = .043$; T1–T3: $M = .24$, $SD = .035$). The chance-effect null hypothesis was also rejected for each time point comparison (T1–T2: $z = 13.24$, $p < .001$; T2–T3: $z = 14.88$, $p < .001$; T1–T3: $z = 13.71$, $p < .001$), indicating that the average level of profile consistency observed in this sample over each time point comparison was significantly different from what would be expected by chance alone.

Profile dispersion (scatter) coefficients were estimated with the same procedure used in Study 1. As in Study 1, the mean profile dispersion was small (T1–T2: −.69; T2–T3: −.10; T1–T3: −.70) but showed a substantial range (T1–T2: −13.11 to 7.54; T2–T3: −10.24 to 12.63; T1–T3: −12.32 to 12.53). No significant gender differences in profile dispersion were observed.

Testing the significance of the observed scatter revealed that the variability in scatter was significantly lower in the observed samples (T1–T2: 3.40; T2–T3: 3.20; T1–T3: 3.61) than in the bootstrapped samples (T1–T2: 6.03; T2–T3: 5.82; T1–T3: 6.00) for each time point comparison (T1–T2: $z = -11.39$, $p < .001$; T2−T3: $z = -12.02$, $p < .001$; T1–T3: $z = -10.72$, $p < .001$). This indicates that the observed scatter was less than what would have been expected by chance alone, which allowed us to reject the chance-effect null hypothesis and provides further evidence of within-person goal stability.

Pearson product–moment correlations were used to examine the relation between fear of failure and the shape and scatter components of ipsative continuity across the three time points. Fear of failure was a negative predictor of profile shape between the first two time points ($r = -.30$, $p < .001$), the second two time points ($r = -.15$, $p < .05$), and the first and last time points ($r = -.20$, $p < .01$), indicating that as fear of failure increased, profile consistency decreased. Fear of failure was also a positive predictor of profile scatter between the first two time points ($r = .19$, $p < .01$) and the first and last time points ($r = .22$, $p < .01$), indicating that as fear of failure increased, profile dispersion also increased. No gender differences were observed for the relationships between fear of failure and either profile consistency or profile dispersion.

In sum, this study provides a complete replication of Study 1, documenting the presence of both achievement goal stability and change. In addition, fear of failure was shown to predict both the shape and the scatter components of ipsative continuity but not individual-level change. That is, although fear of failure did not influence change in single achievement goals per se, individuals who were high in fear of failure did evidence more change in their overall configuration of goals over time.

Study 3

Study 3 sought to extend the investigation of goal stability and change to the 2 × 2 achievement goal framework (Elliot & McGregor, 2001). This model fully crosses the performance–mastery and approach–avoidance distinctions, which results in the addition of mastery–avoidance goals to the trichotomous model. Mastery–avoidance goals are hypothesized to show a stability profile similar to that of performance–approach goals, as both of those goal types involve combinations of appetitive and aversive antecedents and consequences (Elliot & McGregor, 2001). Study 3 also sought to replicate the results obtained in Study 2 regarding fear of failure and person-level stability and change.

Method

Two hundred twenty-four (132 female, 91 male, 1 who did not report gender) undergraduates from an introductory-level psychology class participated in exchange for extra course credit. The mean age of participants was 19.8 years, with a range of 17–35 years. The ethnicity of participants was as follows: 68.8% Caucasian, 13.8% Asian, 4.5% African American, 1.8% Hispanic, 0.9% Native American, 8.0% other ethnicities, and 2.2% who did not report ethnicity. (The data for this study were collected in the context of a larger project; Elliot & McGregor, 2001; none of the focal results reported in the present research has been reported in any prior work.)

The class in which the data were collected was conducted in lecture format. Evaluation was based on three noncumulative exams (approximately 5 weeks apart) and a normative grading structure. At the beginning of the semester, participants completed a measure of fear of failure. One week before each exam, participants completed a measure of achievement goals for the upcoming exam.

The Herman (1990) measure from Study 2 was used to assess fear of failure. Elliot and McGregor's (2001) 12-item Achievement Goal Questionnaire was used to measure achievement goals. In the questionnaire, 3 items each assess mastery–approach goals (e.g., "I want to learn as much as possible during this section of the class"), mastery–avoidance goals (e.g., "I am concerned that I may not learn all that there is to learn in this section of the class"), performance–approach goals (e.g., "It is important for me to do

Table 7
Study 3: Intercorrelations and Reliabilities

Goal and time	1	2	3	4	5	6	7	8	9	10	11	12	13
1. MAP goals, T1	.88												
2. MAV goals, T1	$.32^{***}$	.87											
3. PAP goals, T1	−.13	.05	.94										
4. PAV goals, T1	−.10	$.28^{***}$	$.18^{*}$	.82									
5. MAP goals, T2	**$.75^{***}$**	$.38^{***}$	−.01	−.05	.83								
6. MAV goals, T2	$.28^{**}$	**$.68^{***}$**	.02	.16	$.41^{***}$	.89							
7. PAP goals, T2	−.04	.16	**$.69^{***}$**	$.16^{*}$	.12	.14	.95						
8. PAV goals, T2	−.13	.15	.10	**$.69^{***}$**	−.06	$.19^{*}$	$.23^{**}$	.82					
9. MAP goals, T3	**$.63^{***}$**	$.35^{***}$	−.04	.07	**$.74^{***}$**	$.35^{***}$	.03	.00	.87				
10. MAV goals, T3	$.22^{**}$	**$.57^{***}$**	.01	$.20^{*}$	$.28^{**}$	**$.70^{***}$**	−.02	$.17^{*}$	$.47^{***}$	.86			
11. PAP goals, T3	−.03	.16	**$.71^{***}$**	$.19^{*}$	.13	.10	**$.78^{***}$**	$.19^{*}$	.16	.12	.95		
12. PAV goals, T3	$-.23^{**}$	.16	.14	**$.61^{***}$**	$-.19^{*}$	$.21^{*}$	$.18^{*}$	**$.69^{***}$**	−.07	$.35^{***}$	$.21^{*}$	.83	
13. Fear of failure	−.16	$.33^{***}$	$.21^{*}$	$.37^{***}$	−.09	$.28^{**}$	$.19^{*}$	$.33^{***}$	.01	$.29^{***}$	$.27^{**}$	$.46^{***}$	.87

Note. Internal consistency estimates are presented along the diagonal. Differential continuity coefficients are in boldface. MAP = mastery–approach; T = time; MAV = mastery–avoidance; PAP = performance–approach; PAV = performance–avoidance.
$^{*} p < .05$. $^{**} p < .01$. $^{***} p < .001$.

better than other students on this exam"), and performance–avoidance goals (e.g., "My goal for this exam is to avoid performing poorly"). Participants responded to each item on a scale ranging from 1 *(not at all true of me)* to 7 *(very true of me).*

Results and Discussion

Differential continuity. Pearson product–moment correlations were used to examine differential continuity in achievement goal endorsement across the three time points. Table 7 lists these correlations (as well as Cronbach's alphas and intercorrelations among the goals within each time point), which consistently indicate a high level of stability for each of the four goals. The average goal correlation across all time points was .69, and correlations ranged from .57 to .78. One gender difference in differential continuity was observed: Men (r = .86) showed higher differential continuity than women (r = .63) for mastery–approach goals between Time 1 and Time 2 (z = 3.09, $p < .01$).

Mean-level change. As in Studies 1 and 2, strong factorial invariance was documented in the analysis. We observed no significant decreases in model fit when we added the constraints of the weak invariance model, $\Delta\chi^2(16) = 12.73$, $p = .69$, or the strong invariance model, $\Delta\chi^2(20) = 24.50$, $p = .22$; we only observed a significant decrease in model fit when we added the constraints of the strict invariance model, $\Delta\chi^2(24) = 60.17$, $p <$ .001. Thus, any changes in scores over time can be interpreted as true change instead of measurement error. Paired t tests were used to calculate mean-level change in achievement goal endorsement for the three time point comparisons. Table 8 lists the means, standard deviations, t values (significance values adjusted for Type I error), and Cohen's d effect sizes from these analyses.

The results for mastery–approach, performance–approach, and performance–avoidance goals are essentially identical to those from Studies 1 and 2. Again, mastery–approach goals decreased significantly between T1 and T2, and performance–avoidance goals showed a significant increase between T1 and T2; neither goal changed significantly between T2 and T3. Endorsement of performance–approach goals did not change significantly between any time points. Mastery–avoidance goals, similar to performance–approach goals, did not change significantly between any time points. No significant gender differences in mean-level stability were observed.

Individual-level change. We calculated RCIs to determine whether individual participants showed reliable changes in goal endorsement between time points. Table 9 lists the percentages of participants who showed a reliable decrease, a reliable increase, or no reliable change for each of the three time point comparisons. When aggregated over the entire sample, each of the four achievement goals showed a pattern of change significantly different from

Table 8
Study 3: Descriptive Statistics and Mean-Level Change

Goal type	T1		T2		T3		T1 to T2		T2 to T3		T1 to T3	
	M	*SD*	*M*	*SD*	*M*	*SD*	*t*	*d*	*t*	*d*	*t*	*d*
MAP	16.93	3.27	15.98	3.34	15.49	3.63	$t(144) = 4.91^{***}$	0.41	$t(143) = 2.16$	0.18	$t(146) = 5.78^{***}$	0.48
MAV	11.95	4.24	12.40	4.33	12.12	4.29	$t(144) = -1.52$	−0.13	$t(143) = 0.82$	0.07	$t(146) = -0.71$	−0.06
PAP	13.35	5.01	13.56	5.38	13.23	5.50	$t(143) = -0.70$	−0.06	$t(140) = 1.28$	0.11	$t(144) = 0.21$	0.02
PAV	13.29	4.70	14.08	4.59	14.02	4.66	$t(144) = -2.75^{**}$	−0.23	$t(141) = 0.40$	0.03	$t(144) = -2.17$	−0.18

Note. Degrees of freedom vary because of missing data. T = time; MAP = mastery–approach; MAV = mastery–avoidance; PAP = performance–approach; PAV = performance–avoidance.
$^{**} p < .01$. $^{***} p < .001$.

Table 9
Study 3: Reliable Changes in Achievement Goal Endorsement

Goal type	T1–T2				T2–T3				T1–T3			
	% dec	% same	% inc	$\chi^2(2)$	% dec	% same	% inc	$\chi^2(2)$	% dec	% same	% inc	$\chi^2(2)$
MAP	54.5	22.8	22.8	1,885.0*	41.7	25.7	32.6	1,479.6*	55.1	19.0	25.9	2,036.8*
MAV	35.2	17.9	46.9	1,853.0*	47.9	16.7	35.4	1,905.2*	44.2	12.9	42.9	2,085.2*
PAP	34.7	18.8	46.5	1,802.7*	41.8	22.0	36.2	1,591.6*	42.8	19.3	37.9	1,755.6*
PAV	33.1	13.8	53.1	2,129.1*	45.1	14.8	40.1	1,930.3*	37.2	9.7	53.1	2,296.4*

Note. T = time; dec = decrease; inc = increase; MAP = mastery–approach; MAV = mastery–avoidance; PAP = performance–approach; PAV = performance–avoidance.
* $p < .05$.

what would be expected if change was random. As in Studies 1 and 2, participants tended to show a decrease in mastery–approach goals for each time period and an increase in performance–avoidance goals, particularly from T1 to T2. Approximately the same number of participants showed an increase in performance–approach and mastery–avoidance goal endorsement as showed a decrease in these goals across each time period. No significant gender differences in individual-level change were observed.

A plurality of participants showed reliable change on all four goals between the first two time points (four goals: 47.9%; three goals: 34.7%; two goals: 15.3%; one goal: 1.4%; no goals: 0.7%), between the second two time points (four goals: 42.1%; three goals: 39.3%; two goals: 16.4%; one goal: 2.1%; no goals: 0.0%), and between the first and last time points (four goals: 55.2%; three goals: 30.1%; two goals: 14.0%; one goal: 0.7%; no goals: 0.0%). Nearly every participant showed reliable change on at least one goal over each time point comparison. Pearson product–moment correlations were used to examine the relation between fear of failure and absolute values of the continuous reliable change scores. As in Study 2, reliable change was not significantly predicted by fear of failure for any achievement goal over any time point comparison.

Ipsative continuity. We estimated profile consistency (shape) coefficients by correlating each individual's scores on all four achievement goals over each of the three time point comparisons. (Two participants provided goal profiles with no variability at T2, and 1 participant provided a goal profile with no variability at T3; no ipsative continuity coefficients were computed for those participants for any of the affected time point comparisons.) Overall, the mean profile consistency coefficients were high (T1–T2: .67; T2–T3: .73; T1–T3: .61), as were the medians for the sample (T1–T2: .80; T2–T3: .90; T1–T3: .82). However, the profile consistency coefficients also displayed a substantial range for each time point comparison (T1–T2: −.83 to 1.00; T2–T3: −1.00 to 1.00; T1–T3: −.95 to 1.00), and a notable minority of participants evidenced negative profile consistency (T1–T2: 7.0%; T2–T3: 7.1%; T1–T3: 12.3%). No significant gender differences in profile consistency were observed.

As in Studies 1 and 2, the no-effect null hypothesis was rejected for each time point comparison: T1–T2, $t(142) = 20.86$, $p < .001$; T2–T3, $t(140) = 21.86$, $p < .001$; T1–T3, $t(145) = 15.20$, $p < .001$. This indicated that the average level of profile consistency observed in this sample over each time point comparison was significantly different from zero. To test the chance-effect null hypothesis, we used the randomly paired bootstrapping procedure from Studies 1 and 2. (Eighty-seven cases were removed from the data used to create the randomly paired bootstrapped samples because of missing data at any time point, and three cases were removed because of a lack of variance over any two time points.) The sample means of the observed ipsative coefficients were again much higher than the means of the bootstrapped ipsative coefficients (T1–T2: $M = .16$, $SD = .042$; T2–T3: $M = .12$, $SD = .046$; T1–T3: $M = .16$, $SD = .043$). The chance-effect null hypothesis was also rejected for each time point comparison (T1–T2: $z = 12.14$, $p < .001$; T2–T3: $z = 13.26$, $p < .001$; T1–T3: $z = 10.47$, $p < .001$), indicating that the average level of profile consistency observed in this sample over each time point comparison was significantly different from what would be expected by chance alone.

Profile dispersion (scatter) coefficients were estimated with the same procedure used in Studies 1 and 2. As in Studies 1 and 2, the mean profile dispersion was small (T1–T2: −.25; T2–T3: .12; T1–T3: −.17), but profile dispersion coefficients showed a substantial range (T1–T2: −8.72 to 5.37; T2–T3: −4.24 to 4.50; T1–T3: −4.94 to 6.80). No significant gender differences in profile dispersion were observed.

Testing the significance of the observed scatter revealed that the variability in scatter was significantly lower in the observed samples (T1–T2: 1.71; T2–T3: 1.53; T1–T3: 1.85) than in the bootstrapped samples (T1–T2: 2.74; T2–T3: 2.53; T1–T3: 2.69) for each time point comparison (T1–T2: $z = -8.73$, $p < .001$; T2–T3: $z = -9.26$, $p < .001$; T1–T3: $z = -7.30$, $p < .001$). This indicates that the observed scatter was less than what would have been expected by chance alone, allowing us to reject the chance-effect null hypothesis and providing further evidence of within-person goal stability.

Pearson product–moment correlations were again used to examine the relation between fear of failure and the shape and scatter components of ipsative continuity across the three time points. Fear of failure was a negative predictor of profile consistency between the first two time points ($r = -.16$, $p = .06$), the second two time points ($r = -.17$, $p < .05$), and the first and last time points ($r = -.23$, $p < .01$), indicating that as fear of failure increased, profile consistency decreased. Fear of failure was a positive predictor of profile dispersion between the first two time points ($r = .24$, $p < .01$), indicating that as fear of failure increased, profile dispersion also increased. No gender differences were observed for the relationships between fear of failure and either profile consistency or profile dispersion.

In sum, this study provides a replication of Studies 1 and 2, again documenting the presence of both achievement goal stability and change. Mastery–avoidance goals were a new addition to this study, and the results for this goal are highly similar to those for performance–approach goals. Both the differential continuity results and the mean-level change results for mastery–avoidance goals provide evidence of stability across time points. However, the individual-level change results show approximately equal amounts of reliable increase and decrease in mastery–avoidance goals over time. This change could not be identified in the mean-level change analyses, because the decreases and increases at the person level canceled each other out. Across each of the time point comparisons, ipsative continuity was significantly different not only from zero but also from what would be expected by chance alone. As in Study 2, fear of failure was shown to be a negative predictor of ipsative continuity but not individual-level change over time.

General Discussion

The present research focuses on an important but largely overlooked issue in the achievement goal literature—the issue of goal stability and change. We conducted three college classroom studies designed to examine the degree to which achievement goals remain stable or change over time within a sequence of similar tasks. In conducting our research, we employed a multimethod, integrative approach that was unique to the achievement goal literature and that afforded an unusually detailed picture of goal stability and change.

The results of our studies provide clear and consistent evidence for the presence of both stability and change. Differential continuity and mean-level change analyses yielded information on stability and change at the sample level. The differential continuity findings indicate a considerable amount of rank-order stability for all four achievement goals. The mean-level change results provide further evidence of stability for performance–approach and mastery–avoidance goals but evidence significant shifts over time for mastery–approach and performance–avoidance goals. Individual-level change and ipsative continuity analyses yielded information on stability and change at the person level. The individual-level change findings indicate that each of the four goals exhibited reliable change and illustrate how the sample-level analyses for performance–approach and mastery–avoidance goals masked bidirectional, mutually canceling change in these goals at the person level. The ipsative continuity findings provide evidence of stability in individuals' goal configurations, although sizable ranges of profile consistency (shape) and dispersion (scatter) were observed. Significant variations between men and women in stability and change were occasionally observed, but no consistent pattern of gender differences emerged.

It is noteworthy that not only did each of the achievement goals exhibit change over time, but each displayed a similar degree of within-person change as well. Differential attention has been allocated to some possibilities of goal change more than others (e.g., that between performance–approach goals and performance–avoidance goals; see Elliot & Harackiewicz, 1996; Midgley, Kaplan, & Middleton, 2001), and this can easily lead to the perception that some goals are more susceptible to change than others. Our results suggest, on the contrary, that the four goals are equally malleable at the within-person level, although additional work using different achievement tasks and examining different achievement contexts is needed before definitive conclusions on this matter are warranted.

Change was observed in each of the achievement goals, but the type and direction of change were quite different. Mastery–approach goals showed a sample-level decrease over time, whereas performance–avoidance goals showed a sample-level increase. Performance–approach and mastery–avoidance goals did not show significant mean-level changes, but both showed person-level increases and decreases in equal measure. Thus, mastery–approach and performance–avoidance goals exhibited a primarily unidirectional pattern of change, whereas performance–approach and mastery–avoidance goals exhibited a bidirectional pattern of change. It is interesting that these types of patterns seem to map directly onto the antecedent profiles of these goals, and this may explain the observed patterns of change. That is, mastery–approach and performance–avoidance goals have a pure antecedent profile, in that they are nearly exclusively grounded in positive (e.g., need for achievement) and negative (e.g., fear of failure) antecedents, respectively (Elliot & Church, 1997). Performance–approach and mastery–avoidance goals, conversely, have a mixed antecedent profile, in that they may be grounded in positive antecedents, negative antecedents, or both (Cury, Elliot, Da Fonseca, & Moller, 2006; Elliot, 2005). Achievement goals are experienced differently and produce different consequences as a function of their antecedent foundation (Elliot, 2006). Goals, such as mastery–approach and performance–avoidance goals, that are grounded in a uniform pattern of antecedents produce a uniform pattern of consequences (Elliot, 1997), which likely impels a uniform pattern of goal change. In contrast, goals, such as performance–approach and mastery–avoidance goals, that are grounded in a variable pattern of antecedents produce a variable pattern of consequences (Moller & Elliot, 2006), which likely impels a variable pattern of goal change. The relative strength of these antecedents is likely to have an effect on the strategies adopted to deal with the possibility of failure, and future research in this area would do well to systematically consider this possibility.

In our research, the change in achievement goal endorsement that we observed was more substantial from T1 to T2 than from T2 to T3. Initial goal adoption is presumed to be driven primarily by factors that individuals bring with them to the achievement setting (e.g., motive dispositions, implicit theories of ability) and by explicit or easily detectable features of the achievement environment (e.g., the standard used to evaluate performance, the harshness of performance evaluation). Goal change, however, is likely also driven by additional information that one acquires directly from encountering the achievement task (which may be more or less difficult than one anticipated) and from receiving performance feedback (which may be above or below one's expectations). An individual's initial encounter with the task should have a disproportional influence on goal change, because the additional information acquired from this first encounter is entirely novel. As one moves deeper into the task sequence, novel information becomes less commonplace, and therefore shifts in goal endorsement become less prevalent. This differential trajectory of change over time is likely to be a general phenomenon, applicable to other achievement-relevant constructs besides goals (e.g., see related findings regarding achievement attributions; Mone & Baker, 1992; Thomas & Mathieu, 1994).

In addition to documenting the degrees and types of stability and change for each achievement goal, the present research establishes fear of failure as an individual-differences variable that influences the degree to which stability and change occur in people's goal configurations. As anticipated, individuals who were high in fear of failure, who are particularly reactive to competence evaluation, displayed the greatest amount of change in their goal profiles. The reactivity inherent in fear of failure did not manifest itself in individual-level change, which suggests that the relationship between fear of failure and mean levels of goal endorsement at the person level is complicated by additional influences. Trait-level dispositions and orientations may not be strong enough to directly influence an individual's absolute endorsement of a particular goal. Instead, on the basis of the differences observed in our person-level analyses, these distal influences may exert their influence by altering the relative importance of each goal within an individual's overall configuration of goal endorsements.

Additional research is needed to examine other predictors of achievement goal stability and change. One particularly interesting candidate is implicit theories of ability, both because these theories have been shown to be important predictors of achievement goal adoption (Cury et al., 2006; Robins & Pals, 2002) and because they raise an intriguing possibility. Entity theory represents a belief that ability is immutable, whereas incremental theory represents a belief that ability is malleable (Dweck & Leggett, 1988). Entity theory, much like fear of failure, leads individuals to be highly reactive to competence feedback (Dweck, 1999), which is likely to result in substantial shifts in their goal endorsement. Incremental theory, in contrast, produces minimal reactivity to competence feedback, which is likely to promote stability in goal adoption. Thus, ironically, the implicit theory that is based in stability is likely to produce goal change, whereas the implicit theory based in change is likely to produce goal stability.

We think that the issues addressed in the present research are extremely important for the achievement goal approach to achievement motivation. Questions regarding achievement goal stability and change have been present in the literature for some time (Dweck & Elliott, 1983; Elliot & Harackiewicz, 1996; Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002; Midgley et al., 2001), but it is only recently that these questions have begun to garner research attention (see Senko & Harackiewicz, 2005). Knowledge about the way that achievement goals change and remain stable can inform educational practice as well as provide a foundation for future intervention work. As educators, we would clearly like our students to endorse mastery–approach goals and steer clear of performance–avoidance goals. However, if students initially endorse mastery–approach goals, are these likely to remain stable of their own accord over time, or will substantial effort on the part of teachers and administrators be required to ensure that high levels of these goals are maintained? Can students who enter educational environments with performance–avoidance goals be "rescued" from the maladaptive consequences of these goals, or does the grounding of these goals in dispositions such as fear of failure and avoidance temperament preclude intervention? A critical first step toward addressing these types of questions is the establishment of a framework for studying achievement goal stability and change and then using this framework to document levels and types of variability in students' goal adoption across achievement events. This is what we have sought to do in the present research.

Although our research provides a comprehensive portrait of achievement goal stability and change, much work remains to be done in this area. Essentially, our research has laid a general foundation of knowledge regarding the prevalence of achievement goal stability and change, and subsequent research focused on more detailed questions is needed that builds on this foundation. One question in need of attention concerns when individuals change their goals. Senko and Harackiewicz (2005) have initiated work on this question. These researchers have identified performance feedback as an important variable and have shown that poor performance on an achievement task leads to a decrease in subsequent mastery–approach and performance–approach goals and an increase in subsequent performance–avoidance goals. Additional work is needed to examine other situation-specific variables that may influence when individuals change their achievement goals. Promising candidates include achievement attributions, control beliefs, performance contingencies or instrumentalities, and aspiration levels.

Another question in need of research attention concerns how individuals change their achievement goals. This question focuses on the processes involved in goal change and represents an even more detailed analysis than that represented by the question of when individuals' goals change. Studies addressing this question might examine whether positive and negative emotions, challenge and threat appraisals, and shifts in competence valuation mediate goal change and, if so, whether they do so differently for different types of achievement goals. For example, positive performance feedback on an initial task might elicit positive affect and evoke challenge appraisals for a forthcoming achievement task, and these affect and appraisal processes may produce an increase in subsequent mastery–approach and performance–approach goal adoption. These processes may be particularly effective in increasing the endorsement of already existing mastery–approach and performance–approach goals; positive feedback may be experienced as the absence of a negative outcome rather than the presence of a positive outcome for those with avoidance-based goals (Elliot, 2006), thereby dampening the positive affect and appraisal processes that could promote more optimal goal pursuit.

Beyond the when and how questions lies the important and practical question of whether goal change is adaptive in a given achievement situation. Goal change may represent an adaptive disengagement from an ineffective or deleterious form of achievement striving, or it may represent a premature abandonment of a type of striving that would eventually reap great benefits. The same can be stated with regard to goal stability. Goal stability may represent a persistent striving that continues to hold great promise, or it may represent a stubborn or defensive reluctance to change course when the prospects look grim (Janoff-Bulman & Brickman, 1982; Wrosch et al., 2003). Optimal self-regulation entails an open, informed, and strategic management of one's goal pursuits (Zimmerman & Kitsantas, 2005), and knowing when to persist and when to desist is undoubtedly a critical predictor of long-term performance, intrinsic interest, and overall well-being.

Before closing, we point out two limitations of the present research. First, all three of the studies reported herein were conducted in a college classroom setting. Pajares and Cheong (2003) have shown that the influence of goals can vary across levels of the educational system, which suggests that it is not appropriate to automatically assume that the patterns of stability and change observed in our research will necessarily generalize to students at all grade levels. A related point is that our research focuses on a sequence of achievement tasks that were encountered over a rather brief time period, and the degree to which our results generalize to different achievement contexts and across different time periods remains an open question. It is important to note, however, that each of our studies was conducted in an ecologically valid, real-world achievement setting and that, if anything, the short time intervals between tasks in our research should produce a conservative test of the degree to which goals change over time. The fact that we found considerable change in all four achievement goals in our studies is a strong indicator of the malleability of the goal adoption process. Second, the items that we used to assess mastery–avoidance goals contained some affective content (e.g., worry, concern), and the items used to assess both mastery–approach and mastery–avoidance goals focused on material relevant to the upcoming exam rather than the exam per se; the degree to which this content influenced results for these goals is unknown.

In closing, we reiterate the importance of using multiple methods in examining goal stability and change processes. Our conclusions regarding two of the four goals in the 2 × 2 achievement goal framework would have been very different if we had limited our analysis to the approaches used in achievement goal research to date. Our utilization of four separate, complementary approaches afforded a rich, integrative portrait of goal stability and change and has laid the foundation for subsequent research in this area. We encourage others to continue work on this critically important and overlooked topic, as many details regarding the precise processes involved in achievement goal stability and change remain unknown.

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