

# *Self-Concept, Motivation and Identity*

## *Where to from here?*



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# Causes or Dimensions? Joint Impacts of Specific Self-Attributions and Their Underlying Subjective Dimensionalization on Academic Achievement Motivation

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This paper is concerned with the assumption, that for understanding the motivational consequences of attributions in achievement contexts both aspects, the specific content of self-attributions as well as the location in the causal space must be considered. Based on attributions of 87 pupils some empirical arguments favouring this assumption will become evident: So the presented data will demonstrate, that a priori assignments of specific causes to a certain dimensional characteristic are not possible. Further it will be shown that decisive motivational variables (like academic self-concept, expectancy of success and helplessness) can show different correlations with specific attributions with equal perceptions of the underlying attributional dimensions. At the same time causes with different positions in the causal space can display the same correlations with these motivational variables. And finally it will be shown, that dimensional perceptions explain portions of variance of these motivational variables that go beyond that of the specific attributions and vice versa. Based on these arguments implications for attributional retrainsings and for the measurement of attributions are discussed.

Attributional processes are ascribed a central role within the framework of motivational research with respect to scholastic achievement, a point which has been proven by an extremely wide range of research (for an overview see Pintrich & Schunk, 2002). Although remarkable success in numerous practical applications of attributional theory has been demonstrated, it is by no means assured that the full potential has tapped. In fact, practical utilizations of attributional theory often ignore an important facet, which has been insufficiently investigated up to now, even theoretically: Do the *specific reasons* (e.g., effort or ability), the *perceptions of the underlying dimensions* (e.g., stability, controllability) or rather a *combination* of both embody the decisive factors for causal explanations?

## *Only Dimensions?*

Attributional research and practical applications are based primarily on the models developed by Weiner (1979, 1985). He assumed, that the causal explanations drawn on by students are mediated through subjective *assumptions* on (a) how temporally stable the particular attributions are (*stability*), (b) on the degree to which these causal factors can be localized within the actor (*locus of causality*) and (c) on the extent to which they can be intentionally influenced by the acting person (*controllability*). Here, the positions of causal explanations in the *causal space* defined by these basic dimensions exhibit a predominant role. Specifically speaking, Weiner argues that consequences of attributional processes can be ascribed to these positions in the causal space, but not to the specific content of the causal explanations. The model therefore classifies the different cognitive, motivational and emotional consequences of attributional processes according to their genotype and not their phenotype (Weiner, 1986), in other words to dimensional differences and not to the specific content of causal explanations. On the basis of this assumption, similar consequences of phenotypically different attributions can be explained through their genotypic similarity, that is, they are likewise perceived on the three dimensions stability, locus of causality and controllability. This view implies, that, in principle, dimensionalizations can be considered detached from the specific causes they refer to and that the relationships between attributions and that consequences of attributional processes could be predicted *entirely* through the perceptions of the underlying dimensions.

The fact that the attributional dimensions which lie at the base of causal attributions play a prominent role in the explanation of the resulting motivational and emotional processes has been verified in numerous empirical studies and investigations and has been freed from the burden of doubt for quite some time (see Graham, 1991). However, concrete proof that the content of specific causal explanations has no claim on the consequences of attributional processes which transcends that of attributional dimensions is still lacking.

## *Dimensions and Causes?*

Although it is undisputed that the three dimensions named above are decisive for the effects of attributions, it is also possible that specific reasons can possess information which is not represented in their dimensional characteristics, i.e. that individuals perceive additional semantic content in the specific causal factors. This should be observable in causal factors with identical dimensionalizations but different meanings. These factors should have different relationships with motivational and emotional variables influencing academic performance. Initial empirical evidence on the question as to whether specific causal explanations contain informational content which can not be found in attributional dimensions is offered by Van Overwalle (1989). He placed both, specific causal explanations and therefrom detached generalized dimensionalizations in relationship with the performances of university freshmen. Here it could be shown that dimensionalizations, although found to contribute to variance explanations in examination assessments in a manner which conforms with theoretical predictions, are less related to performance than specific attributions. These findings indicate that individuals can perceive a semantic content in causal factors which exceed the impact of stability, locus of

causality and controllability. This study, however, measured attributional dimensions at a general level, independent of the specific causes to which they are related. For this reason the association between specific reasons and the dimensions upon which they are based remains unclear, in particular the possible dependence of the effects of dimensional beliefs on the causal factors to which they refer.

### *Aims and Overview of the Current Research*

The objective of this work is a contribution to the empirical clarification of one central research question: In order to completely understand the motivational consequences of attributions, does one need to consider the dimensions of these attributions as well as the specific reasons? We expected, that specific reasons should play a semantic role beyond that represented through the dimensions, and therefore the consideration of both reasons *and* dimensions is necessary to fully understand the motivational consequences of attributional processes.

In order to clarify this research question we investigated the causes grade school students referred to in explaining scholastic success and failure in the subject of mathematics as well as the individual perception of the dimensionality of these attributions. Our hypothesis, that the consideration of both reasons and dimensions is necessary, was tested by means of correlation and regression analyses with a combined factor which acts as an external criterion and covered three important aspects of scholastic motivational sets, namely success expectation, academic self-concept and experiences of helplessness. If in fact specific reasons should play a semantic role beyond dimensional properties, then three effects should be evident: (a) Different specific reasons which have been similarly located in the causal space could correlate differently with the external criterion. (b) Specific reasons, that correlate identically with the external criterion, could be perceived as being different with respect to how stable, internal, or controllable they are. (c) In regressing the external criteria on the dimensions, the specific causes may be shown to be responsible for explaining an additional proportion of the variance.

## **Method**

### *Participants*

A total of 87 6<sup>th</sup> grade students participated in the questionnaire study conducted in the subject of mathematics. The children were attending five different classes of a "Gymnasium" (college preparatory school) in Munich, Germany. The average age of the participants was 12.2 years ( $SD = 0.6$ ); the proportion of female participants came to 38%.

### *Measuring Instruments*

#### *Attribution Magnitude and Subjective Dimensionalizations*

The questionnaire developed by Dresel, Schober & Ziegler (2004a) was used to assess the strength of individual attributions (attribution magnitude) as well as the subjective stability, internality (i.e. locus of causality) and controllability of these causes (attributional dimensions). In the section of the questionnaire which assesses attribution magnitude, the students were presented with the seven causal classes "Ability", "Effort", "Concentration", "Emotional factors", "Other persons", "Task characteristics" and "Chance" in three success scenarios and three failure scenarios. Each causal class was anchored with examples of concrete attributions. For example an item from the causal class "Other persons" in the case of success read, "When you accomplish a goal in math, then it is because of other persons. (Examples: your teacher explained the material very well, another student let you copy his work or your parents helped you)". The items were presented in conjunction with a six-point rating scale anchored by the poles 1 (*I do not agree at all*) and 6 (*I agree completely*). The resulting scale for the assessment of the magnitudes of relevant attributions in the context of the subject of mathematics encompasses a total of 42 items (2 situational outcomes x 3 scenarios x 7 causal classes). The item and scale analyses resulted in good internal consistencies ( $\alpha = .77-.88$ ;  $Md(\alpha) = .81$ ). The subjective dimensionalization of the attributions was assessed subsequent to the assessment of the above named scales with a series of 42 single items. The students were presented with three items to measure the subjective stability, internality and controllability of the causal factors in both the case of success and the case of failure for each of the seven attributional classes (Example: Item root "Imagine that you have just done really well on a math test. Furthermore, imagine that the reason you did so well is due to other persons." Stability: "Would this reason also be important when you take your next math test?" Internality: "Is this reason true because of you or because of something else?" Controllability: "Can you influence this reason at will?"). The items were to be answered according to a six point answer scale with the poles 1 (*absolutely not / is due to something else / I cannot influence it*) and 6 (*absolutely / is due to me / I can influence it*).

#### *Expectancy of Success*

A Five Item Scale developed by Dresel et al. (2004a) came into operation to assess the expectations the students had of how successfully they will come to terms with future challenges in the subject of mathematics (Sample item: "In the future, I will certainly perform well in math"). The items were assessed along a six-point rating scale from 1 (*absolutely disagree*) to 6 (*agree completely*). The analysis of the internal consistency resulted in  $\alpha = .71$ .

### *Academic Self-concept*

In order to assess the academic self-concept in the subject of mathematics, a domain specific version of three item pairs from the scale "Belief in one's own abilities" (Dweck, 1999) came into operation (Sample item pair: "I see myself as being generally talented at math" vs. "I doubt whether I am talented at math"). Each of the statements in an item pair represented a pole along a six-point answer scale, whereby a low value represented a low academic self-concept in the subject of mathematics. The internal consistency of the scale was  $\alpha = .78$ .

### *Helplessness*

Domain specific helplessness was assessed with three items from the Helplessness Scale (HiS; Breitkopf, 1985), adapted for the subject of mathematics (Sample item: "Even if I study a lot, I won't be good at math"). The items were answered on the basis of a six-point answer scale with the poles 1 (*absolutely disagree*) and 6 (*agree completely*). The scale demonstrated an internal consistency of  $\alpha = .69$ .

In order to address the theoretical questions being pursued in the present work, the scale means of success expectation, academic self-concept and helplessness were combined. This was justified by high correlations between the three scales measuring aspects of students motivation ( $|rs| > .58$ ) and a single factorial solution resulting from a factor analysis including the three scale values. The consistency of the resulting indicator was  $\alpha = .82$ . The higher the value of this composite is, the more advantageous the motivational set is.

## **Results**

### *Descriptive Statistics and Mean Differences*

Table 1 contains mean values and standard deviations calculated for the magnitudes and the dimensions of the attributions for success and failure. The first point one can make in reference to attribution magnitude is that success, on the average, was mainly explained by effort and concentration. In the case of failure, moreover, emotional factors such as nervousness, and task characteristics such as degree of difficulty, are made responsible for poor performances to a comparable extent. Both possible situational outcomes were attributed to a lesser extent to own abilities (or lack of it).

In considering the subjective dimensionalization of the attributions, one is initially struck by the comparatively high levels of the variances obtained. The variances of the subjective dimensionalizations were compared with those of the attributional magnitudes. For 27 of 42 dimension variables, a test of the homogeneity of variances for two correlated samples (Pitman, 1939) confirmed at the 5% level that their variance was greater than that of the corresponding attributional magnitude. These noticeably greater distributions indicate that the subjective search for the position within the causal space of different explanations for success and failure is comprised of large inter-individual differences.

When the subjective stability, internality and controllability of the various causal categories are compared with one another, one can isolate a series of significant findings (see Table 1). In the case of success, effort and concentration are perceived, on the average, as being more stable, more internal and more controllable than one's own abilities, which in turn are judged to have the same (moderate) degree of stability as task characteristics or emotional factors. In comparing the two causal factors "Ability" and "Task characteristics" it is worth remarking that they are appraised, in similar manners, to be internal grounds for the realization of a success. When attributing a failure to lack of abilities, the students associate this cause with higher degrees of variability and externality than they do when the same situation is perceived to be due to "Chance". In contrast, effort, concentration, emotional factors and task characteristics are understood as being more stable and more internal. Even the attribution "Other persons" was perceived as being more internally localized than "own" abilities. The controllability of the causes of failure unfolds a somewhat more differentiated image: Here effort, concentration and emotional factors are assessed as being more controllable than ability, task characteristics and other persons. Chance, in turn, is seen as being more uncontrollable than any of the other factors.

### *Correlations with the External Criterion*

As shown in Table 2, the bivariate correlations between the attribution magnitudes and the combined value of expectation of success, academic self-concept and helplessness repeat, for the most part, the familiar patterns known from the literature (e.g., Marsh, Cairns, Relich, Barnes & Debus, 1984; Platt, 1988; Skaalvik, 1994). However, the correlations for causal explanations of failure by "Other persons", "Task characteristics" and "Chance" which are often understood as being beneficial for self-esteem (e.g., Weiner, 1985) showed an unexpected direction and were associated with unfavorable expressions of the criterion variable. Also, the analysis of the relationships between the subjective dimensionalizations of the causal factors and the dependent variable yielded a number of significant correlations (Table 2). Here one is struck by the relatively high levels of correlations for the dimensional perceptions of "Ability", "Effort" and "Concentration" as attributions of success in comparison to the low correlations for the other variables.

To answer the question of a possible motivationally relevant semantic fraction of causal attributions, not included in the dimensional perception, the relationships of attributions with identical dimensionalizations were examined. If no additional semantic fraction is inherent, reasons with the same dimensionalizations should exhibit identical correlations with the external criterion. When one considers correlations with the dependent variable of the two attributions to

success “Ability” and “Task characteristics”, which are both perceived in the same degree as stable, internal and controllable (comp. Table 1), it becomes clear that these two causal factors display different relationships to the criterion variable. By applying Steiger’s (1980) test for independent correlation coefficients, the difference in correlation coefficients could be statistically confirmed ( $z = 6.17; p < .001$ ). When an analogous investigation is made for the two attributions of failure “Concentration” and “Emotional factors”, which can not be differentiated with respect to the degree of stability, internality and controllability accredited to them (cf. Table 1), one ascertains that for these two attributions, correlations with the criteria variables yield contrary patterns ( $z = 4.02; p < .001$ ). Both of the correlational differences reported were still detected after the application of attenuation-corrected correlation coefficients ( $z_s > 5.26; p_s < .001$ ).

Evidence for additional gains of information would also be supplied when attributions with identical relationships to an external criterion were found to have different dimensionalizations. The attributions “Other persons”, “Task characteristics” and “Chance” in the case of success feature a comparable correlation with the motivational set (no significant differences among the three correlation coefficients;  $z_s < .54; p_s > .59$ ), they were, however, subject to different appraisals with respect to the dimensions accredited to them (cf. Table 1). Similar results were obtained for the two attributions to failure “Ability” and “Task characteristics” ( $z = .85; p = .39$ ). Additionally, after the application of attenuation-corrected correlation coefficients, significant differences could still be isolated for the trio of success attributions ( $z_s < .77; p_s > .44$ ) as well as for the duo of failure attributions ( $z = 1.37; p = .17$ ).

### *Proportions of Criterion Variance*

Finally, estimations of unique proportions of the variance of the criterion variable accounted for the magnitudes of the specific attributions on the one hand and for their dimensionalizations on the other were obtained (Cohen & Cohen, 1983, pp. 139-154). First the full model was specified for each of the 14 factors of success and failure, in that the attribution magnitude of a causal factor as well as the three perceptions of stability, internality and controllability of this causal factor were included as predictors. On the basis of the full models, a second step determined to what degree the exclusion of the attribution magnitude reduced the explained criterion variance. The common  $F$ -Test was used to determine whether the resulting difference  $\Delta R^2_M$  (semipartial  $R^2$  in terms of Cohen & Cohen, 1983), which represents the part of the criterion variance that uniquely accounted for the attribution magnitude, is significantly greater than zero. An analog process was conducted in a third step with the set of the three dimensionalizations: The part of the variance of the motivational set that uniquely accounted for the subjective dimensionalizations of a causal factor ( $\Delta R^2_{SIC}$ ) was determined by removing the three variables. The variance proportions  $\Delta R^2_M$  and  $\Delta R^2_{SIC}$  are most central with respect to our research questions, and are therefore presented in Table 3 alongside the regression coefficients contained in the full model.

The results indicate differentiated proportions according to different causal factors. For a first group of causal factors it could be shown that the variance of the motivational set could be entirely explained through dimensionalization, i.e. there was no significant variance proportion which could uniquely account for the attribution magnitudes. This group contained the success attributions “Effort”, “Concentration” and “Emotional factors” as well as the failure attribution “Concentration”. For a second group of causal factors (success explanations through high ability levels and failure explanations through unfavorable emotional factors), for the set of the perceptions of stability, internality, and controllability, as well as for the magnitudes of specific causes, unique variance proportions could be confirmed. Alongside, for a third group of the causal factors, the analysis demonstrated that exclusively the magnitude of the specific cause shared unique variance with the external criterion. The dimensional perception of these causes made no contribution to the explanation of the variance that is not represented in the attribution magnitudes. This third group of causes primarily contained, in addition to ability attributions in cases of failure, those causal factors deemed by Weiner (1985) to be external (“Other persons”, “Task characteristics”, “Chance” in the case of success). For the two attributions to failure “Effort” and “Chance” no statistically significant relationships could be secured for either attributional magnitude or dimensionalization.

### **Discussion**

At first, the present study provided a large degree of support for the warning made by Russel (1982), not to make the “fundamental attributional error” of disregarding inter-individual differences and therefore subjective views of the dimensionalization of attributions. Specifically spoken, we observed a large degree of inter-individual variance underlying the subjective dimensionalizations and perceptions of the dimensional characteristics of causes which could not be integrated into the classifications originally postulated by Weiner (1979, 1985).

Our main research question dealt with the popular view that psychological relevance follows from the position attributions occupy in the causal space spanned by the attributional dimensions (e.g., Weiner, 1985). In the examination of their relationships with a combined value of three motivational variables (expectancy of success, academic self-concept, helplessness), it could be shown that the dimensionalizations of all causal factors do not have the same type of relationship with this external criterion. These differences indicate the possibility that dimensional perceptions of attributions can have psychological consequences dependent on the particular specific causes to which they refer. However, maybe the most striking results of the present study are that attributions which are identically located in the

causal space can demonstrate different, and to some degree contrary, relationships with the external criterion and that attributions which demonstrate different relationships with the criterion can have the same dimensional constellations. Thus, the assumption that phenotypically different specific reasons, which have identical geneotypical locations in causal space, do not differ (Weiner, 1986), is not consistent with the results of our investigation. Furthermore, the regression analyses showed that for each causal factor, dimensional perceptions and magnitudes of the factor made differential unique contributions to the explanation of the variance of the motivational criterion. It could only be shown for one third of the causal factors that the clarification of the criterion variance stemmed exclusively from their dimensional positioning. For the remaining attributions, including the explanation through own abilities, it was found that the intensity of the specific attributions either had additional explanatory capacity or stood in an exclusive relationship with the criterion. These results imply that dimensional perceptions and magnitudes exercise differential levels of relevance according to the particular causal explanations.

One rather obvious theoretical objection could be raised against our conclusion that dimensions and specific reasons need to be considered in tandem, namely, that not all relevant dimensions could be assessed, by what additional proportions of variance explanation could have been possible. A good candidate here would be globality. Admittedly, it was shown, that in achievement contexts globality is of weak significance (Peterson, Maier & Seligman, 1993; Weiner, 1986). Furthermore, Weiner (1986) himself has collected a great deal of evidence that the three dimensions stability, locus of causality and controllability are sufficient to describe the consequences of attributional processes in achievement contexts. Nevertheless, one must admit that the incorporation of additional dimensions will still be unable to explain the finding that specific reasons, which have the same relationships with motivation variables, can be perceived as different stable, internal, or controllable.

With respect to our method, the criticism could arise that the correlational findings result from measures which are unreliable (to a varying manner). Beyond the fact that, in particular, measurements of attribution magnitudes are of a good reliability by known means, this can be largely dismissed due to the fact that the differences between the concerning correlations remain significant resp. insignificant after attenuation correction. Although the impact of the differential criterion relationships of identically dimensionalized reasons and the divergent dimensionalization of reasons with equivalent relationships to a criterion can hardly be placed under methodological question, artifacts in the form of differentiated variances and varying levels of magnitude for specific causes can not be completely ruled out for the regression analyses. So, the results of the regression analyses point out the need for a replication, especially in a longitudinal design. Thereby the changes in the variables of the motivational set should be observed with respect to their dependence on attributional processes. Here one would be able to specify which motivational consequences the magnitude of specific causal explanations can have at the one hand and, simultaneously could be tested, which have their dimensional perceptions at the other hand (Dresel, Schober & Ziegler, 2004b).

Our findings have significance for both the conception of measuring instruments intending to assess attributions as well as the development of trainings designed to improve attributional style. The measurement of attributions should assess both specific reasons as well as the dimensions of these reasons in the future, since these variables are responsible for the clarification of independent proportions of variance. A reduction to specific reasons or their position in the causal space alone can lead to the loss of valuable information. So far attributional retrainings have almost exclusively operated with specific reasons. For example, a failure was met with a comment that indicated to the student that the outcome can be attributed to the high difficulty of the task (Heller & Ziegler, 1996). There was no control exercised to insure that the training participant perceived this attribution as external and variable, i.e. in the desired self-worth protecting manner. The type of understanding desired must be secured before one can begin to operate with specific attributions.

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Table 1. Descriptive Statistics of all Attributional Variables Assessed.

	Attribution <i>M</i> ( <i>SD</i> )						
	ABIL	EFFO	CONC	EMOT	OTHE	TASK	CHAN
Success							
Magnitide	4.5 (1.1) <sup>I</sup>	5.2 (0.9) <sup>II</sup>	5.1 (0.9) <sup>II</sup>	4.6 (1.1) <sup>I</sup>	3.8 (1.4) <sup>III</sup>	4.5 (1.2) <sup>I</sup>	2.6 (1.3) <sup>IV</sup>
Stability	4.3 (1.4) <sup>I</sup>	5.1 (1.2) <sup>II</sup>	5.3 (1.0) <sup>II</sup>	4.6 (1.4) <sup>I</sup>	3.2 (1.5) <sup>III</sup>	4.4 (1.4) <sup>I</sup>	2.2 (1.3) <sup>IV</sup>
Internality	4.2 (1.5) <sup>I</sup>	5.1 (1.2) <sup>II</sup>	5.2 (1.0) <sup>II</sup>	5.0 (1.2) <sup>II</sup>	3.3 (1.7) <sup>III</sup>	4.0 (1.7) <sup>I</sup>	2.3 (1.6) <sup>IV</sup>
Controllability	3.9 (1.7) <sup>I</sup>	5.1 (1.1) <sup>II</sup>	5.1 (1.2) <sup>II</sup>	4.8 (1.5) <sup>II</sup>	3.1 (1.7) <sup>III</sup>	3.6 (1.7) <sup>I</sup>	2.1 (1.5) <sup>IV</sup>
Failure							
Magnitide	2.7 (1.2) <sup>I</sup>	4.0 (1.5) <sup>II</sup>	4.4 (1.2) <sup>II</sup>	4.4 (1.3) <sup>II</sup>	3.0 (1.3) <sup>I</sup>	4.3 (1.2) <sup>II</sup>	2.8 (1.3) <sup>I</sup>
Stability	2.7 (1.5) <sup>I</sup>	4.2 (1.8) <sup>II</sup>	4.4 (1.6) <sup>II</sup>	4.4 (1.6) <sup>II</sup>	2.9 (1.6) <sup>I</sup>	4.1 (1.5) <sup>II</sup>	2.5 (1.7) <sup>I</sup>
Internality	2.9 (1.7) <sup>I</sup>	4.6 (1.6) <sup>II</sup>	4.5 (1.6) <sup>II</sup>	4.8 (1.3) <sup>II</sup>	3.5 (1.7) <sup>III</sup>	4.2 (1.6) <sup>II</sup>	2.7 (1.7) <sup>I</sup>
Controllability	3.5 (1.8) <sup>I</sup>	5.1 (1.4) <sup>II</sup>	4.9 (1.3) <sup>II</sup>	4.7 (1.5) <sup>II</sup>	3.2 (1.8) <sup>I</sup>	3.4 (1.9) <sup>I</sup>	2.0 (1.4) <sup>III</sup>

Note. *N* = 87 for all values and analyses. ABIL = Ability; EFFO = Effort; CONC = Concentration; EMOT = Emotional Factors; OTHE = Other Persons; TASK = Task Characteristics; CHAN = Chance. High values correspond to a higher occurrence of the respective construct. For both, success and failure, means were row wise compared by applying MANOVAs with repeated measurements. Significant differences could be confirmed for all eight groups (*F*s (6,516) >

26.429;  $p < .001$ ). The values were compared to one another with post-hoc tests (Bonferroni adjusted). Roman numerals indicate those groups of values which cannot be distinguished from one another on at least the 10% level.

*Table 2. Pearson Correlations Between the Attributional Variables and the Composite of the Dependent Variables Expectation of Success, Academic Self-Concept and Helplessness.*

	Attribution						
	ABIL	EFFO	CONC	EMOT	OTHE	TASK	CHAN
Success							
Magnitude	.55***	.24*	.31**	.15 <sup>+</sup>	-.24*	-.30**	-.30**
Stability	.44***	.23*	.23*	.06	-.10	-.24*	-.08
Internality	.37***	.41***	.42***	.29**	-.02	-.02	-.08
Controllability	.38***	.46***	.32**	.26**	.03	-.01	-.10
Failure							
Magnitude	-.53***	.13	.29**	-.19*	-.31**	-.44***	-.12
Stability	-.13	-.01	.15 <sup>+</sup>	-.18*	-.07	-.25**	.04
Internality	-.23*	.16 <sup>+</sup>	.34***	.13	.01	-.09	-.09
Controllability	.13	.22*	.26**	.13	.06	-.14 <sup>+</sup>	-.17 <sup>+</sup>

*Note.*  $N = 87$  for all coefficients. ABIL = Ability; EFFO = Effort; CONC = Concentration; EMOT = Emotional Factors; OTHE = Other Persons; TASK = Task Characteristics; CHAN = Chance.

\*\*\*  $p < .001$ . \*\*  $p < .01$ . \*  $p < .05$ . <sup>+</sup>  $p < .10$ .

*Table 3. Regression Analyses to Estimate the Proportions of the Motivational Set Variance that Accounted Uniquely for the Attribution Magnitude or Uniquely for the Set of Three Underlying Attributional Dimensions.*

	Attribution						
	ABIL	EFFO	CONC	EMOT	OTHE	TASK	CHAN
Success							
$R^2$	.37	.22	.19	.12	.07	.10	.10
$\Delta R^2_M$	.11***	.00	.00	.00	.05*	.04 <sup>+</sup>	.09**
$\Delta R^2_{SIC}$	.06 <sup>+</sup>	.17**	.11*	.10*	.01	.01	.01
Failure							
$R^2$	.31	.08	.15	.16	.11	.19	.05
$\Delta R^2_M$	.20***	.01	.02	.06*	.10**	.12***	.01
$\Delta R^2_{SIC}$	.02	.06	.07 <sup>+</sup>	.12*	.02	.01	.04

*Note.*  $N = 87$  for all analyses. Dependent variable in every analysis is the composite of expectation of success, academic self-concept and helplessness. ABIL = Ability; EFFO = Effort; CONC = Concentration; EMOT = Emotional Factors; OTHE = Other Persons; TASK = Task Characteristics; CHAN = Chance.  $R^2$  = Explained criterion variance of the full model;  $\Delta R^2_M = R^2_{change}$  and the significance level of the  $F_{change}(1,82)$  test attained by excluding attribution magnitude from the full model;  $\Delta R^2_{SIC} = R^2_{change}$  and significance level of the  $F_{change}(3,82)$  test attained by excluding the three subjective dimensionalizations from the full model.

\*\*\*  $p < .001$ . \*\*  $p < .01$ . \*  $p < .05$ . <sup>+</sup>  $p < .10$ .