
CREATING RICH PORTRAITS

A Mixed-Methods Approach to Understanding Profiles of Intrinsic and Extrinsic Motivations

A person-centered, mixed-methods approach (self-report surveys, semistructured interviews, school records) was used to characterize and evaluate profiles of intrinsic and extrinsic motivations among 23 third-through eighth-grade students. Cluster analysis suggested four distinct profiles: high quantity (high intrinsic, high extrinsic), primarily intrinsic (high intrinsic, low extrinsic), primarily extrinsic (low intrinsic, high extrinsic), and low quantity (low intrinsic, low extrinsic) motivation. The primarily intrinsic profile showed the

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which intrinsic or extrinsic motivation per se is the focal point for statistical analysis. This approach has yielded rich information about the developmental trajectories and predictive power of both intrinsic and extrinsic motives.

But particular combinations of motives may be more meaningful than levels of either type of motivation alone. In order to address this possibility, person-centered approaches that examine how variables interact and combine within individual students must be adopted (Bergman & Trost, 2000). Consider an analogy from Magnusson (2003): Whereas a traditional variable-centered approach might address the correlates of a particular variable, such as body temperature, a person-centered approach might consider how body temperature combines with other variables (e.g., muscle tone, respiratory function) to determine which clusters of symptoms are diagnostic of particular illnesses. Person-centered approaches thus may provide a window for understanding motivation as it operates in the complex world of the classroom.

Motivation researchers from diverse theoretical traditions have recently adopted such approaches to examine the prevalence and adaptive value of particular combinations of motivational variables (e.g., Conley, 2012

ally shown a more adaptive pattern of responding among profiles with high levels of intrinsic motivation than those with low levels of intrinsic motivation across a range of outcomes (e.g., course grades, engagement, learning strategies). But among those profiles with substantial intrinsic motivation, there is mixed evidence regarding the optimal combination of motivation types. Predominantly intrinsic profiles (i.e., those with minimal extrinsic motivation) appear to be most adaptive for some outcomes, but no more so than profiles characterized by high levels of both motive types for others—a pattern similar to that of research on multiple goal pursuit in the achievement goal literature (e.g., Daniels et al., 2000 ; Pastor, Barron, Miller, & Davis, 2000 ; Tuominen-Soini, Salmela-Aro, & Niemivirta, 2012).

show the most adaptive pattern of responses across a broad array of correlates. The rationale and hypotheses for each potential correlate are described in the following sections.

Learning strategies. The ability to regulate and facilitate one's own learning is a critical component of school success (Pintrich & DeGroot, 1990). We considered the extent to which both deep (e.g., elaboration, organization, critical thinking) and surface (e.g., rehearsal, memorization) learning strategies may be related to motivational profiles. Variable-centered research has shown intrinsic motivation to be positively correlated with the use of deep and, to a lesser extent, surface strategies (Entwistle & Ramsden, 1983; Meece, Blumenfeld, & Hoyle, 1991; Nolen, 1991; Weinstein & Mayer, 1990). There is also evidence of a positive relationship between surface learning strategies and aspects of extrinsic motivation (Román, Cuestas, & Fenollar, 2000). The only relevant person-centered study to date aligns with these findings: high school and college students with primarily intrinsic and high quantity motivation reported greater use of deep cognitive strategies than their peers (Vansteenkiste et al., 2000), with motivational profiles accounting for between 10% and 11% of the variance in strategy use. We predicted a similar pattern among our younger students.

Of course, students may also use a variety of strategies that interfere with—rather than contribute to—learning. Variable-centered research has shown a negative relationship between intrinsic motivation and the use of both superficial strategies (e.g., guessing, copying) and self-handicapping (Meece et al., 1991; Shih, 2000). There is also evidence that extrinsic motivation may relate positively to superficial strategy use (Meece et al., 1991; Stipek & Gralinski, 1990). Again, only one person-centered study has addressed these issues, finding the greatest maladaptive strategy use among students with primarily extrinsic and low quantity motivation, and the least among those with primarily intrinsic motivation, with motivational profiles accounting for between 12% and 11% of the variance in strategy use (Vansteenkiste et al., 2000). Accordingly, we expected the greatest use of maladaptive strategies among students with high quantity and primarily extrinsic motivation because seeing schoolwork as a means to an end may promote a superficial route to task completion.

Ability-validation goals. Students with different motivational profiles may also differ in their focus on ability-validation goals—a type of performance goal that involves striving to confirm intellectual ability through school performance (Grant & Dweck, 2003). These goals capture the original conception of performance goals in terms of proving one's competence to self and others and may have significant consequences for students' learning and well-being (Brophy, 2000; Dweck & Leggett, 1991). Indeed, endorsing ability-validation goals is associated with losses to intrinsic motivation (Grant & Dweck, 2003; Haimovitz, Wormington, & Corpus, 2011) and poor achievement (Hulleman, Schrager, Bodmann, & Harackiewicz, 2010). Although no studies have yet examined the association between ability-validation goals and extrinsic motivation, the two constructs share a preoccupation with demonstrating performance. Therefore, we expected students with primarily extrinsic motivation to endorse ability-validation goals to a greater extent than their peers, particularly those with primarily intrinsic and low quantity motivation.

Well-being. Perhaps the most commonly studied emotion in relation to motivation is anxiety. Variable-centered work has established that anxiety is negatively related to academic intrinsic motivation (Gilman & Anderman, 2000; Gottfried, 1991) and positively related to extrinsic motivation (Assor, Kaplan, Kanat-Maymon,

& Roth, 2000 ; Ryan & Connell, 1989). Similarly, person-centered research has shown that high school students with primarily intrinsic motivation demonstrate the least anxiety, while those with primarily extrinsic motivation report the most, with motivational profiles accounting for 1%–11% of the variance in anxiety (Ratelle et al., 2000 ; Vansteenkiste et al., 2000). Research with high quantity students is mixed in that they appear to have either less or equivalent anxiety compared to their peers with primarily extrinsic motivation (Ratelle et al., 2000 ; Vansteenkiste et al., 2000).

Beyond anxiety, variable-centered studies have shown a positive relationship between academic intrinsic motivation and general life satisfaction (Gilman & Anderman, 2000 ; Sheldon, Ryan, Deci, & Kasser, 2000), but it remains to be seen how combinations of intrinsic and extrinsic motivations may relate to psychological well-being in children. This issue is particularly interesting with respect to the high quantity profile given that competing goals may compromise well-being. In the present study, we expected students with primarily intrinsic motivation to show the greatest life satisfaction and least anxiety, while those with primarily extrinsic and potentially high quantity motivation would be at an emotional disadvantage. Students in the low quantity profile were expected to fall somewhere in the middle because they were presumed to be less emotionally engaged with school in either a positive or negative sense.

Academic achievement. Variable-centered research has shown classroom grades and standardized test scores to be positively correlated with intrinsic motivation and negatively correlated with extrinsic motivation (Corpus et al., 2000 ; Lepper et al., 2000 ; Miserandino, 1983). Consistent with these findings, person-centered research has documented the strongest classroom grades among students with primarily intrinsic motivation at the elementary and middle school level, with high quantity motivation as a close second among older populations (Corpus & Wormington, 2001 ; Hayenga & Corpus, 2010 ; Ratelle et al., 2000 ; Vansteenkiste et al., 2000 ; Wormington et al., 2012). Motivational profiles have accounted for between 5% and 12% of

defined deep and surface learning strategies in these ways (Entwistle & Ramsden, 1983; Nolen, 1987; Weinstein & Mayer, 1990). Superficial strategies were assessed with five items from previous research on superficial cognitive engagement (Meece et al., 1998);

characterize and differentiate the four motivational profiles. It began with a series of

cases, notes were taken by hand. Students were reminded that their responses would be kept confidential, and interviewers attempted to establish rapport with students in order to maximize their comfort in responding honestly. Interviewers asked questions in the order listed above, probed for more detail when needed, and repeated back utterances that were unclear to ensure accurate interpretations. Although there was occasional difficulty understanding students' responses, even the youngest participants seemed able to comprehend the interview questions and respond appropriately. The entire interview typically lasted

Table 1. Differentiating Interview Codes and Frequency by Cluster

Interview Code	Definition	Sample Quote	No. of Students Reporting (Percentage of Cluster)			
			HQ (n = 1)	PI (n = 13)	PE (n = 1)	LQ (n = 11)
School attitudes: Work avoidant	Dislike volume of work perceived to be excessive	"[I dislike reading because] you have to do extra homework"	1 ()	2 (1)	0 (0)	1 ()
Dislike areas of low competence	Dislike activities perceived to reflect low competence	"I just don't like [math]. I'm not very good at it all."	2 ()	0 ()	0 ()	0 ()
Dislike specials	Dislike academic specialty classes (e.g., PE, art, music)	"Probably music [is my least favorite time] because I get kind of bored in what we do."	3 (20)	1 ()	3 (33)	1 ()
Like hands-on	Like interactive, project-based assignments and exercises	"We have to make a model, like with a whole thing like tepees and stuff. It just really fascinates me."	0 ()	0 ()	0 ()	0 ()
Like social interaction	Enjoy school activities that allow for social interaction	"[I like] getting to share our stuff in class. I like getting to talk with my friends and see what they did and what I did."	2 ()	1 ()	3 (33)	3 (2)
Like nonacademics	Nonacademic times (e.g., recess, lunch) are favorites	"I think lunch [is my favorite time] because it's relaxing."	2 ()	1 ()	2 (2)	3 (3)
Self-appraisal: Self as competent	Describe self as smart, high achieving	"[I have a] good memory, so I remember things. Smart. I get a lot done quickly and I can learn things quickly."	11 (3)	0 ()	11 (3)	0 ()
Self as intrinsically motivated	Describe self as curious, drawn to challenge and mastery	"I like challenging things. I don't like just sitting there and doing really easy problems."	3 (20)	0 ()	3 (20)	3 (3)

Table 1. (Continued)

Interview Code	Definition	Sample Quote	No. of Students Reporting (Percentage of Cluster)			
			HQ (n = 1)	PI (n = 13)	PE (n = 1)	LQ (n = 11)
Self as poorly behaved	Describe comportment negatively (e.g., getting in trouble, being late)	“Sometimes I get pretty bored and I doze off, but then you know, I get back up again.”	3 (20)	3 (23)	(0)	1 ()
Nervous about public perception	Worry or embarrassment when performing in public, often accompanied by concerns about making mistakes	“You get called on and you don’t know the questions, you feel like if you answer it wrong you’re going to get embarrassed.”	(2	1		0

Table 1. (Continued)

Interview Code	Definition	Sample Quote	No. of Students Reporting (Percentage of Cluster)			
			HQ (n = 1)	PI (n = 13)	PE (n = 1)	LQ (n = 11)
Agnostic about privileges ^c Book selection scenario—personal interest vs. teacher recommendation:	Express neutral emotional reaction about the practice of special privileges	"I don't really care"	1 (13)	0 (0)	3 (3)	1 (20)
Emotional reaction—interest satisfaction	Indicate that their feelings about the choice would depend on the extent to which their personal interests were satisfied	"Not so happy, because I might have liked the other book better than that one."	2 (13)	3 (3)	1 (1)	2 (1)
Desire for appropriate choice	Express desire to make an appropriate choice in terms of difficulty level, topic, or match to personal characteristics	"... because it might be better for like the level of reading" 0				

Table 1. (Continued)

Interview Code	Definition	Sample Quote	No. of Students Reporting (Percentage of Cluster)			
			HQ (n = 1)	PI (n = 13)	PE (n = 1)	LQ (n = 11)
Emotional reaction— negative (nonspecific) ^a	Indicate nonspecific but negative feelings about making the choice	“I think QFT@me				

percentage of the cluster in which each code appeared most frequently). Codes with a between-cluster frequency range less than 2 % were excluded from further analysis, leaving 33 total codes, which are presented in Table 1, along with their definitions and sample quotes. We then examined patterns of responses across these codes in order to generate broader conclusions about each cluster.

During the coding process, we additionally noticed a tendency for apathetic responses (e.g., “I don’t know/care”) that was not captured by our coding scheme, particularly among transcripts from students who reported low levels of motivation. Therefore, a coder who was naive to both cluster membership and the broader goals of the study made a holistic assessment of (1) whether or not each transcript was marked by apathy, and (2) if so, the degree of apathy expressed using a 3-point scale. She was trained using eight transcripts and coded the remaining transcripts independently. Reliability was established by comparing her ratings on a set of 10 randomly selected transcripts to those of the third author ($r = .$).

Verification procedures. We used a number of procedures to verify our qualitative approach (see Creswell, 1). First, we used methodological triangulation by comparing characteristics of the four clusters revealed via the interview with those revealed via the survey responses. As noted previously, we hoped to both achieve verification across these multiple sources and gain new information that enriched our understanding of each motivational profile.

Second, we engaged in member checking informally during the interviews by repeating back unclear utterances and frequently restating or summarizing what children said to ensure accurate interpretations. Because our participants were children, we did not engage in member checking regarding our analytic categories, interpretations, and broader conclusions.

Third, we attempted to acknowledge researcher bias throughout the research process. Our knowledge of the literature on intrinsic and extrinsic motivations undoubtedly influenced the design of our interview protocol, the development of our coding scheme (e.g., expecting themes such as competence and curiosity to emerge), and our focus on differences rather than similarities across clusters. We have acknowledged these aims and biases in our introduction and our description of the coding procedure, and took steps to prevent them from invalidating our interpretations. For example, the coding scheme was developed without knowledge of cluster membership, and transcripts were fully coded before examining cluster differences. In addition, the use of multiple investigators provided a context for reflexive dialogue.

Finally, with an awareness of these biases in mind, we aimed to be open to patterns of data that contradicted either previous research or findings from our quantitative phase, with the notion that such contradictions could be sources of enrichment and complexity.

Results

Q u a l i t a t i v e F i n d i n g s

Preliminary analyses. Table 2 presents descriptive statistics and correlations among all variables, which were generally consistent with previous research (e.g.,

Assor et al.,

when everybody's staring at you you're going to probably mess up during a song or something. Then, if you do, people probably start laughing at you."

More pronounced differences between the primarily extrinsic and high quantity clusters were revealed in the section on classroom context. Although students in all clusters reported positive reactions to choice opportunities, a greater proportion of the primarily extrinsic cluster described the choice as enjoyable. They also reported less room for making their own decisions compared to their peers, as in the case of the following fifth-grade student: "I think we don't get to choose, which I feel really upset about. Like sometimes I'm like—in my head—I'm like, *I don't want to be here. I don't want to be bossed around by somebody.* Sometimes, like if my teacher tells me to do something I'll be like, 'Yes, [teacher's name],' but in my mind I'm like, *No, [teacher's name], I get to do what I want to do. . . . I still do what the teacher says but in my mind I'm like, I don't want to do this.*"

Responses to the hypothetical scenarios again revealed similarities between the primarily extrinsic group and high quantity group in their desire to please others: four offered an other-oriented rationale for selecting the book at home, and five cited a desire to please others as justification for their project selection. As one eighth

their public perception and about not having materials required for class. But they did appear invested in their performance outcomes: all but one student from this group reported being nervous about performance, compared to substantial but smaller numbers of their peers from other groups.

The classroom-context portion of the interview also suggested a unique perspective among students in the low quantity profile in that they were less likely to perceive or desire choice opportunities in the classroom. One sixth grader explained that “I just like to be told what to do because I don’t really like picking things.” A fifth grader cast this in more emotional terms: “Sometimes it can be very overwhelming making your own choices, and stressful.” Overall, then, the responses from the low quantity cluster suggested a mixture of apathy and anxiety.

Discussion

The current study adopted a nuanced approach to examining the experiences of students who varied in their endorsement of intrinsic and extrinsic motives to learn.

Consistent with previous research (Hayenga & Corpus, 2010; Vansteenkousoortia-20(a43n)-34.3n

Although one could imagine extrinsic motivation to be helpful in the absence of intrinsic motivation, a comparison of the primarily extrinsic and low quantity groups suggests that this was not the case. If anything, the primarily extrinsic group showed a less adaptive pattern of responding in that they were more likely to endorse ability-validation goals and showed tendencies toward work avoidance, concerns about others' approval, and a lack of personal autonomy. These two groups with relatively low levels of intrinsic motivation also shared some maladaptive patterns compared to the other profiles (e.g., relatively poor performance, compromised well-being), but their distinct responses underscore the need to consider levels of intrinsic and extrinsic motivation in concert. This echoes related work with older populations (Vansteenkiste et al., 200) in which the primarily extrinsic and low quantity groups shared some maladaptive patterns (e.g., cheating, poor metacognition, poor performance) but not others (e.g., anxiety, procrastination). Thus, a distinction between these two groups appears to emerge in elementary school and maintain through the high school and college years.

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In addition to confirming primarily intrinsic motivation as the most adaptive profile for elementary and middle school students, this study revealed new understandings about the benefits and drawbacks associated with particular combinations of motivation types. By identifying a set of relatively unexpected characteristics for each profile, the present study adds a richer and more complex understanding of how each experiences school.

First, the high quantity group reported relatively high levels of both life satisfaction and ability-validation goals. This is surprising because ability-validation goals predict maladaptive responding in the face of failure and losses to intrinsic motivation over time (Grant & Dweck, 2003; Haimovitz et al., 2011). Perhaps the relatively high classroom grades among students in this profile prevented such a maladaptive response. It will be important for future research to determine whether levels of life satisfaction remain high for students in this profile over time, particularly following situations of challenge.

Second, students in the low quantity group appeared invested in their schoolwork to a greater degree than anticipated. Although they did show more signs of apathy than their peers, they also reported anxiety about their performance. This underscores the possibility that poor performance and its negative emotional sequelae may be a cause rather than a consequence of low quantity motivation. Longitudinal and experimental research could provide a window for understanding the causal mechanisms at play (e.g., anxiety levels manipulated via cognitive reappraisals could test for an accompanying effect on motivation; see Jamieson, Mendes, Blackstock, & Schmader, 2010). Another sign of engagement among the low quantity cluster was their enthusiasm for learning via hands-on methods, an approach to learning that the literature has shown to be supportive of increasing motivation and engagement more generally (e.g., Linn & Muilenburg, 1). Of course, the schools in the present study had a strong sense of community and personal accountability, perhaps making it difficult for students to fully disengage. Tracking these students as they make the transition to the potentially more anonymous context of high school would be illuminating.

Third, students in the primarily intrinsic group presented themselves as more well-rounded than their peers by referring often to hobbies or extracurricular activ-

levels of each variable in isolation. More generally, the present findings suggest that person-centered approaches provide an important complement to the variable-centered methods that dominate the field, and that quantitative and qualitative methodologies can be employed together fruitfully in this area of research. A rich and situated understanding of how students in different motivational profiles interpret and respond to school experiences may be a first step in developing maximally effective motivational interventions.

Notes

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1. Intrinsic-extrinsic motivation and achievement goals are related yet distinct constructs. Intrinsic motivation and the mastery goal construct both include competence strivings, but the former is specific to cases when the desire originates from within the self. Intrinsic motivation also more broadly encompasses curiosity-driven engagement and the autonomous pursuit of challenge. Extrinsic motivation differs from the performance goal construct in that the latter is primarily operationalized in terms of interpersonal demonstrations of competence; extrinsic motivation refers more broadly to the engagement in behaviors for their instrumental value, such as pleasing others or gaining material rewards.

2. A check for representativeness revealed that interviewed and noninterviewed students did not differ by age, gender, grade level, ethnicity, or any of the surveyed measures (all p s > .1), except for an overrepresentation of African-Americans interviewed, $\chi^2(1, 23) = .11, p < .05$.

3. The first factor accounted for 21% of the variance. The second factor accounted for an additional 11% of the variance. With the exception of one superficial strategy item that was ultimately dropped, all loadings were above .50 with no cross-loadings greater than .25. Retaining the four strategic approaches to schoolwork as separate factors produced a similar set of findings to that reported in the Results section.

4. Analysis of the written interview transcripts indicated an average word count (child utterances only) of 1,022 ($SD = 250$), with a range from 210 to 3,100. This word count did not differ across the four clusters, $F(3, 10) = 1.10, ns$, nor did it differ for younger ($M = 1,022, SD = 250.31$) versus older ($M = 1,132, SD = 250.13$) students, $t(10) = -.1, ns$. Thus, the variability in length of interviews seems unlikely to have affected the results in a systematic way.

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