

Types of Homeschool Environments and Need Support for Children's Achievement Motivation

Debra A. Bell^a, Avi Kaplan^b, and S. Kenneth Thurman^c

^aAim Academy, Palmyra, Pennsylvania, USA; ^bSpecial Education in Teaching & Learning, Temple University, Philadelphia, Pennsylvania, USA; ^cEducational Psychology, Psychological Studies in Education, Temple University, Philadelphia, Pennsylvania, USA

ABSTRACT

Working within a self-determination theory (SDT) framework, this study used cluster analysis to examine the naturally occurring types of homeschool-learning environments parents (N = 457) have created. Measures of support for student autonomy, mastery goal structure, and use of conditional regard were adapted for a homeschool context and used as constituting variables. Follow-up measures of parental need satisfaction, efficacy, student academic engagement, teaching practices, and demographics were used to identify significant differences among homeschooling motivational profiles. A five-cluster solution best fit the data: a high need support profile, low need support profile and three profiles of mixed need support. In general, the high need and mixed need support profiles were associated with higher student engagement, need satisfaction, efficacy for homeschooling, and frequent use of teaching strategies that promote autonomous motivation and support for student competence. The low need support profile was significantly associated with lower need satisfaction and teaching strategies associated with control. Higher levels of academic engagement were reported for those students homeschooled longer and at higher grade levels. Male teaching parents (N = 29) reported significantly less need satisfaction and were significantly more represented in the low need support profile. These findings point to the utility of self-determination theory for characterizing the motivational environments of homeschools.

KEYWORDS

achievement motivation; homeschooling; homeschool teaching practices; selfdetermination theory

Along many dimensions, homeschooling is increasing, diversifying, and spreading globally (Gaither, 2009; Home School Legal Defense Association, 2001). Few government regulations restrict the range of practices homeschooling parents may adopt. Arguably the largest natural experiment in the history of American education, this freedom allows for unimpeded innovation and experimentation not feasible in traditional settings. The question remains open as to how homeschooling parents configure appropriate learning environments for their children, given the meaningful differences among homeschools. Identifying these may

CONTACT Debra A. Bell 🔯 dbell@debrabell.com

Color versions of one or more of the figures in the article can be found online at www.tandfonline.com/wjsc. © 2016 Taylor & Francis

provide a clearer picture of the characteristics of homeschool environments that support or hinder student learning and achievement. To date, no empirical study has sought to identify such differences, nor to examine the approaches to instruction that distinguish them. Our aim is to examine distinctions among homeschooling environments along axes of support for student autonomy, competence, and relatedness—the three inherent needs self-determination theory posits for the optimal development of achievement motivation.

Homeschools as learning environments

Many scholars have noted the opportunity for optimal learning a homeschool (in contrast to a conventional school) may provide (Knowles, 1991; Ray, 2002; Van Galen, 1988). Yet, few studies have investigated the opportunities, contingences, and constraints parents may face in reality. In a review of his research, Ray (2005) reported on practices of homeschooling parents that included "flexible and highly individualized [programs], involving both homemade and purchased curriculum materials" (pp. 16–17). However, Ray also reported other practices that might contradict the autonomy and individualized opportunity for students learning, such as limiting television and outside influences, required church attendance, and punishment and reward systems (Cai, Reeve, & Robinson, 2002; Kunzman, 2009). These reports were corroborated by one of the few empirical studies to examine homeschools as learning environments, which found that religiously motivated home educators (n = 71) endorsed a more controlling motivational style than did public school educators (n = 76) (Cai et al., 2002).

Several factors may explain differences in the motivational climate of homeschooling environments. Research has found that family demographics, including higher levels of income, parental education, parental occupations, and smaller family size are positively correlated with students' academic achievement. Research has also suggested that factors such as single-parent status, large family size, limited resources, or psychological stress may reduce the time and energy parents have to provide the opportunities that promote achievement motivation (e.g., Marjoribanks, 2002; Schneider & Coleman, 1993).

Researchers have also considered how parenting style may influence children's achievement motivation. Research has pointed to the positive relations of child's motivation with parents' consistent emotional warmth, involvement, and regard (e.g., Assor, Roth, & Deci, 2004; Grolnick, Kurowski, & Gurland, 1999; Gutman, Sameroff, & Eccles, 2002); involvement in academic work (Eccles, 1993; Fan & Chen, 2001); developmentally-appropriate structure and challenge (Grolnick et al., 1999; Grolnick & Ryan, 1989); valuing and modeling achievement (Eccles, 1993); and an autonomy-supportive motivational style in which choice, problem solving, and shared decision making is encouraged (Grolnick & Ryan, 1989).

Adoption of different teaching practices and beliefs may also be associated with differences in homeschooled students' achievement motivation. Research on teachers suggests that expectations for the individual student is paramount (Brophy, 1985; Eccles-Parsons et al., 1983; Weinstein, 1989), and that teacher's efficacy for promoting student learning (e.g., Midgley, Feldlaufer, & Eccles, 1989); and the teacher's provision of socioemotional support (Eccles & Midgley, 1989; Patrick, Ryan, & Kaplan, 2007) are also highly important. Teaching practices that promote student autonomy (Deci & Ryan, 1985; Grolnick & Ryan, 1987) in combination with appropriate structure (Grolnick, Gurland, Jacob, & Decourcey, 2002; Skinner & Belmont, 1993) and challenge (Brophy, 1999; Pintrich & Schunk, 2002) also correlate with students' achievement motivation and academic engagement. Conversely, teachers who emphasize peer competition and comparisons on ability and success undermine intrinsic motivation, especially in children who do not believe they possess the competence necessary for success (Kaplan & Maehr, 2007).

Homeschooling provides a unique opportunity for the development of achievement motivation—not only might students develop adaptive strategies, but parents are ostensibly unconstrained in their freedom to design adaptive learning environments for their children. At the same time, such factors as larger family size, limited financial resources, or overarching parenting beliefs and behavior may undermine this support.

Self-determination theory

One approach to conceptualize and better understand homeschool learning environments is with theories that characterize motivating learning environments. One motivational perspective that has demonstrated its utility across diverse contexts is self-determination theory (SDT; Deci & Ryan, 2000). SDT is a comprehensive perspective on human motivation and development that contends that all humans are motivated by three fundamental psychological needs—autonomy, competence, and relatedness. Autonomy refers to the need to perceive oneself as the locus of one's own behavior (Ryan & Deci, 2002) and to endorse actions that are valued by significant others. Competence refers to the need to feel capable in one's interactions with the social environment, increase these abilities, and have the opportunity to express one's capacities. Relatedness refers to the need to feel socially connected, accepted, and valued by others; to experience a sense of belongingness to other individuals and to one's community (Ryan & Deci, 2002). The satisfaction of these needs provides for the development of autonomous motivation—the optimal form of motivation that is associated with growth and social and psychological well-being (Deci & Ryan, 2000).

Parents and teachers can facilitate the development and maintenance of autonomous motivation in children by adopting an autonomy-supportive motivating style and instructional practices that manifest through the quality of their feedback, the design of activities that build on children's interests and preferences, provision of opportunities for optimal challenge, meaningful choice and opportunities for self-direction, and acknowledgement of negative feelings (Reeve, 2009; Ryan & Deci, 2000). In contrast, parents and teachers undermine autonomous motivation and psychological well-being when they adopt a controlling motivating style and practices that rely heavily on external regulation and evaluative pressure (Niemiec & Ryan, 2009). As such, SDT provides a theoretical framework to investigate meaningful sociocontextual differences among types of homeschool environments.

The current study

We applied self-determination theory to conceptualize and characterize the motivational profiles of homeschools, and to investigate the relations of these motivational profiles with parent- and student-desired motivational processes seeking to answer these questions:

- (1) What profiles of homeschool environments do parents create along the dimensions of support for autonomy, competence, and relatedness?
- (2) What teaching strategies characterize different motivational profiles of homeschool environments?
- (3) What family, parent, and student characteristics are associated with different motivational profiles of homeschool environments?

Methods

Participants

Participants for the study were homeschooling parents recruited from a nonsectarian homeschool organization which offers online classes, several affinity groups associated with a particular homeschool demographic of interest (e.g., African-American, unschoolers, gifted and talented, urban regions), and readers of a popular blog related to homeschooling. A \$5 Amazon gift card was offered to participants. Two hundred and fifteen (51% response rate) responded from the nonsectarian group. One hundred and fifty-three responded from the affinity groups. Estimates suggest that the respondents included between 25%–30% of the members. The blog owner

estimated 5,000 U.S.-based homeschoolers subscribed to her blog. Twohundred and ninety-six participants came from the blog readers. Together, 664 parents responded to the survey. Respondents were excluded from the analysis if they did not complete at least the first demographic measure, did not meet the operationalized definition of homeschooling, or entered nonsensical answers deemed as suspicious. The final sample included 457 participants.

Participant characteristics

Participants were characteristically married (N = 430; 94%), female (n = 407; 89%), White (n = 394; 86%) and between 35–54 years of age (n = 346, 76%). This sample was significantly better educated and wealthier than national means and previously reported homeschool samples (Planty et al., 2007; Princiotta & Bielick, 2006).

In contrast with a reportedly high quit rate among homeschoolers (Isenberg, 2007), this sample represented the highly committed: 74% of the participants (n = 341) stated they were "certain to homeschool next year." In addition, the sample represented a very experienced group of parent-teachers. Sixty-six percent (n = 309) reported having homeschooled 5 years or more.

A contentious issue between some American homeschoolers and authorities has been appropriate levels of oversight. The degree of monitoring was measured as a continuous variable on a 5-point Likert-response scale (5 = clo-sely monitored, 3 = some monitoring, 1 = no monitoring). Generally speaking, the sample reported some to little monitoring of their program by authorities; 36% (n = 164) of the respondents selected "no monitoring" which positively skewed the distribution (M = 2.25; SD = 1.2).

Measures

Measures assessed demographic characteristics; parental support for student autonomy, competence, and relatedness; efficacy for homeschooling; parents' own basic need satisfaction; teaching practices; underlying motivations for homeschooling; and parental perception of the target student's academic engagement. Most measures came from prior research but were not previously established as reliable and valid for homeschool populations; thus all were adapted for a homeschool context. The teaching practices survey, motivations for homeschooling, and academic engagement measures were specifically designed for this study. To establish a unit of analysis, parents were asked to consider the child they had homeschooled the longest when answering the pedagogical questions. Those children equally divided by gender (213 girls, 48%; 238 boys, 52%), primarily from 11th–12th grade (167, 36%), and otherwise distributed relatively equally across grade levels (range 57–89, 12%–19%) except for Pre-K (10, 2%).

Motivation for homeschooling

Parents were asked to provide a short response to the questions, "Please list your initial reasons for deciding to homeschool. Was there a particular event or experience that contributed to your decision to homeschool?"

Three measures assessed the constructs used to typify the homeschooling environments:

Support for autonomy

Support for autonomy was assessed with *The Problems in School Questionnaire* (PIS), developed by Deci, Schwartz, Sheinman, and Ryan (1981). The measure poses eight vignettes which focus on a student's school-related problem followed by four strategies a teacher or parent might adopt to address this situation. This creates a 32-item measure consisting of four subscales which represent points along a continuum from a highly controlling motivational style to a highly autonomy supporting motivational style. Respondents must indicate on a 7-point Likert-like scale how appropriate (1 = very inappropriate, 4 = moderately appropriate, 7 = very appropriate) they believe each response would be in the situation. Cai and colleagues (2002) found all eight vignettes (unaltered) produced consistent scores with a religiously motivated home-school sample (N = 71).

Our initial pilot of the PIS with 50 homeschool parents did not reach desirable levels of internal consistency. The measure was revised, and a new pilot with 49 homeschool parents suggested acceptable levels or reliability measured with Cronbach's alpha (High Autonomy = .72, Slight Control = .74, Moderate Control = .72, High Control = .79).

Support for competence

Support for competence was assessed with a 10-item scale from The Patterns of Adaptive Learning Survey (PALS) (Midgley et al., 2000) that assesses a teacher's mastery goal structure. Mastery goal structure refers to messages, emphases, and supports in the environment about the value of development of competence (Kaplan, Middleton, Urdan, & Midgley, 2002). These messages include emphasizing that mistakes are part of learning, that deep understanding is more important than memorization, and that effort is a virtue. Hence, a mastery goal structure constitutes support for students' need for competence. Minor adjustments were made to adapt the scale to a homeschool setting (e.g., *in this school the importance of trying hard is stressed* was changed to *in this homeschool the importance of trying hard is stressed with this child*). Respondents report the extent of their agreement with statements on a 5-point Likert scale (1 = strongly disagree, 3 = somewhat agree, 5 = strongly agree). The reliability of the scale in the pilot study was acceptable (a = .72).

336 👄 D. A. BELL ET AL.

Support for relatedness

Support for relatedness was assessed by the parent survey of the Positive and Negative Conditional Regard Scale (Assor, Roth, & Deci, 2004). Conditional regard constitutes a central psychological mechanism that undermines the need for relatedness, as it signifies the conditional nature of the relationship and of the acceptance of the child (Ryan, 1995). The researchers identified parental use of conditional negative regard (PCNR; i.e., emotional withdrawal and rejection as punishment for behaviors the parent dislikes) and conditional positive regard (PCPR; i.e., emotional warmth, praise, and acceptance as a reward only for behaviors the parent desires) as two distinct constructs which both frustrate the child's need for relatedness (Assor, Roth, & Deci, 2004). The scale produces two scores; one for PCNR and one for PCPR, with scores falling between 1 and 5, respectively. Acceptable Cronbach's alphas were established with the first pilot study group (PCPR a = .82; PCNR a = .76). In the study, PCNR and PCPR were highly correlated (r = .67) and a confirmatory factor analysis indicated that all items loaded on a single factor. In order to avoid issues concern with multicollinearity, we used a composite score for Parental Conditional Regard.

Four measures were used to assess desirable and undesirable outcomes of different homeschooling environments:

Academic engagement

As a proxy for student outcomes, we designed an academic engagement scale based upon Reeve's (2002) list of observable clues for autonomous motivation among children. The 8-item scale measured the parent's perception of the quality of the child's engagement along the dimensions of interest, effort, preference for challenge, initiative, enjoyment, persistence, expression of negative emotions, and independence (i.e., How interested is this student in his or her school studies? 1 = never interested, 3 = sometimes interested, 5 = always interested). Higher scores represent a higher degree of perceived academic engagement. This scale had a Cronbach's alpha of .88 in the first pilot study group.

Efficacy for homeschooling

A 4-item scale designed by Deci and Ryan to tap the motivators' (e.g., parents, coaches, teachers, managers) own sense of competence in a specific domain was adapted to fit the domain of homeschooling for this study (i.e., I feel confident in my ability to homeschool my children, 1 = not at all true, 4 = somewhat true, 7 = very true). Scores are summed and averaged, with higher scores indicating higher efficacy for homeschooling. The results of the pilot study yielded a Cronbach's alpha of .88 for this scale.

Need satisfaction

As a measure of parent outcomes, we included a 21-item scale also designed by Deci and Ryan and adapted for the domain of homeschooling. The scale has three subscales (i.e., autonomy, competence, and relatedness). Higher scores on each of the subscales are associated with higher need satisfaction. The initial pilot study yielded an overall Cronbach's alpha of .85 with alphas for subscales: need for autonomy a = .45, need for relatedness a = .87, and need for competence a = .75. An additional item was added to the need for autonomy scale to improve overall reliability in the main study.

Teaching practices

For the question concerning the instructional strategies that parents use, we developed a 42-item scale that asked about frequency of use of particular teaching practices from the beginning of this school year (i.e., 1 = never, $2 = once \ or \ twice$, $3 = once \ or \ twice \ a \ month$, 4 = weekly, $5 = several \ times \ a \ week$, 6 = daily, $7 = several \ times \ a \ day$). Items were drawn from the self-determination theory literature on teaching practices associated with student need-support (e.g., Reeve, 2002; Reeve & Jang, 2006) and from a content analysis of homeschooling practices in the literature on homeschooling.

Procedure

Responses for the pilot and the main study were collected online in one wave over the course of several weeks using Survey Monkey Pro. Owners of the lists and blog provided their contacts with a short description of the study and the incentive of the Amazon gift card via e-mail or a post. They also endorsed the study and noted the lead author's long affiliation with the homeschool community. Unique links to the study were provided for each source. Follow up e-mails were sent twice to the e-mail lists. The blog post generated so many responses that the link was removed after three days.

Data analysis

In order to characterize the sample of parents, we conducted a directed qualitative content analysis on their responses to the open-ended question about their motivation for homeschooling using the categories that have emerged from the NCES's regular data collection on homeschooling in the United States.

To investigate the naturally occurring motivational profiles of homeschools, we conducted a cluster analysis on the data set using *z*-scores of the variables assessing support for autonomy, competence, and relatedness: PIS, Mastery Goal Structure, and Conditional Parental Regard. Cluster analysis is a method that seeks and groups cases that are similar to each other. We first used Ward's

method with a squared Euclidean distance as a measure of similarity, which is a method designed to minimize variance within clusters and maximize variance between clusters (Ward, 1963). The analysis is exploratory in nature. It begins with all the cases, and begins grouping the two most similar cases iteratively, until it ends with one group that includes all participants in the sample. Selecting the useful number of clusters in the data follows parsimony, theoretical significance, and magnitude of change in an agglomerative coefficient that indicates how much information is lost when two cases are combined. This analysis points to a number of clusters and provides the mean of the clustering variables for each cluster. We used these means with a confirmatory K-means clustering method (Gore, 2000; Hair, Anderson, Tatham, & Black, 1998; Tan, Steinbach, & Kumar, 2006). Following the identification of the clusters, we conducted a multivariate analysis of variance (MANOVA) with post hoc univariate tests with the clusters as the independent variable to determine the goodness of fit and the degree of variance the model explained in the variables that constituted the clusters (i.e., support for autonomy, competence, and relatedness). We then performed separate analysis of variance (MANOVAs) on the three external variables which served as proxy for parent and student outcomes, and which are theoretically linked to self-determination theory: parent's basic needs satisfaction, efficacy for homeschooling, and parents' report on student academic engagement.

To investigate the teaching strategies associated with the different motivational profiles of homeschools, we first submitted the 42-item teaching practices survey to an exploratory factor analysis (EFA). After listwise deletion, 356 cases were available for analysis. After examining the correlation matrix, we removed 10 items from further analysis because they had a small number of correlations above .3 with other items (Tabachnick & Fidell, 2007). An examination of the scree plot suggested a six-factor solution based on the eigenvalue greater than 1 criterion. However, factor 6 only contained two items and explained a small amount of the variance. An EFA forcing a five-factor solution suggested underlying latent factors related to parents' pedagogue intended to (a) monitor the student's progress, (b) promote autonomous motivation, (c) support the need for competence, and (d) exert external control. The fifth factor was labeled "Independent" and suggested the target student was self-monitoring and self-motivating. The remaining items were retained as singular variables. We calculated composite scores for these five variables and conducted multivariate and univariate analysis of variance with these variables and the remaining single-item variables as outcomes and clusters as independent variables (see Appendix).

We then compared the different homeschool profiles on categorical and continuous demographic variables. Chi-square tests were used to examine the categorical variables and ANOVAs were performed on the continuous ones. Finally, we collapsed the clusters to look at the continuous and categorical variables across the sample.

Results

Ten main themes emerged from a content analysis of the open-ended question designed to tap parents underlying motivation for homeschooling. Overall, "a desire to provide a child-centered education" emerged as the predominant motivation (n = 169, 35%). Only 21% identified "a desire to provide a religious or moral instruction" as a primary trigger (see Table 1).

The psychometric characteristics of the variables are reported in Table 2. Most variables demonstrated satisfactory psychometric properties. However, high autonomy orientation, efficacy for homeschooling, and need for autonomy were significantly negatively skewed, indicating that this sample of homeschool parents endorsed a highly autonomous motivational profile on the PIS, and also reported high levels of efficacy for homeschooling, and autonomous need satisfaction.¹

Descriptive characteristics of the teaching practices variables suggest that this sample of homeschool parents used the following teaching practices most frequently: (a) resources other than textbooks, (b) student manages his or her own time, (c) talk with the student about what he or she is learning, (d) encourage questions about what the student is learning, (e) praise student for his or her progress, and (f) ask student to explain something he or she is learning. Conversely this sample of homeschool parents reported using the following teaching practices most infrequently: (a) classes at a local private or public school, (b) college classes locally, (c) rewards as an incentive for doing work, (d) loss of privileges as an incentive for doing work, (e) take a field trip related to academic work, and (f) give a test (see Appendix).

Correlations among variables

Zero-order correlations among the substantive variables are presented in Table 3. The variables used for the cluster analysis (PIS, mastery goal

Category	п	Percentage of sample
Initial reasons		
Concerns about the school environment	128	28
To provide religious or moral instruction	95	21
Concerns about academic instruction at other schools	105	23
Child has physical/mental health issues	23	5
Child has special needs	21	5
Pragmatic reasons	53	12
To promote family closeness	82	18
Influence of other homeschoolers	52	11
Desired a child-centered approach	160	35
Other	19	4

Table 1. Motivation for homeschooling.

340 👄 D. A. BELL ET AL.

Variable	Ν	M (SD)	Skewness	Kurtosis	Alpha
Problems in school (PIS)	457	.564 (3.2)	102	.646	
High autonomy	457	5.93 (.80)	-1.65	5.87	.82
Slight control	457	4.13 (.77)	.105	.242	.67
Moderate control	457	4.27 (.85)	.064	.155	.70
High control	457	3.51 (1.0)	.157	.118	.80
Mastery goal orientation	457	4.06 (.52)	435	102	.71
Conditional regard	457	2.06 (.87)	.801	.205	.88
Positive	456	2.04 (1.0)	.818	033	.84
Negative	456	2.08 (.91)	.807	.033	.80
Efficacy for homeschooling	457	6.11 (.92)	-1.10	.661	.89
Parental need satisfaction	429	5.90 (.68)	869	.738	.84
Autonomy	451	6.08 (.75)	-1.17	1.11	.66
Relatedness	449	5.81 (.95)	784	.134	.80
Competence	440	5.80 (.91)	833	.499	.71
Academic engagement	448	3.97 (.57)	359	149	.88

structure, and conditional regard) were significantly correlated in the expected direction. The PIS and mastery goal structure were positively and moderately correlated (r = .37, p < .01), and both were negatively correlated with conditional regard (r = -.501, -.223, p < .01), with effect sizes large and small to medium, respectively.² The PIS subscales also were correlated in the expected direction. The parent's perception of student academic engagement variable was significantly correlated with all variables in the expected direction as well.

The factors extracted from the teaching practices survey correlated in expected ways with all variables except for monitoring and external control, which presented a less clear picture. Both variables correlated positively and most strongly with high control orientation on the PIS, conditional regard, and each other; but also had medium, positive correlations with the support for autonomous motivation and competence-supporting teaching practices. Of all variables, the use of external control was most strongly and negatively correlated with student academic engagement (r = -.53, p < .01).

Cluster analysis

The final-cluster solution was based upon parsimony of the cluster solution, explanatory power (50% of the variance for each of the constituting variables; Milligan & Cooper, 1985) and interpretability. A five-cluster solution explained 56% of the variance for the PIS, 70% of the variance in conditional regard, and 64% of mastery. The five-cluster solution also produced a clear High Need Support cluster (i.e., support for student autonomy, competence, and relatedness), Low Need Support cluster and three Mixed Need Support clusters which were interpretable. Based upon this analysis, we retained the

		1 y y 1 y 1 y 1 y 1 y 1 y 1 y 1 y 1 y 1													
	٦	2	3	4	5	9	7	8	6	10	11	12	13	14 1	5
1. HghAut	I														
2. SlghtCntr	.148**	I													
3. ModCntrl	.069	.682**	Ι												
4. HghCntrl	157**	.527**	.640**												
5. PIS	.580**	435**	628**	872**											
6. Mstry	.365**	002.	024**	198**	.312**	I									
7. CndRgd	186**	.343**	.386**	.490**	501**	223**	I								
8. Effcy	.228**	002	.028	134**	.191**	.370**	241**	Ι							
9. Engmnt	.170**	068	048**	222**	.236**	.260**	310**	.403**							
10. NdStftn	.304**	144**	146**	304**	.382**	.362**	423**	.488**	.371**	I					
11. Autmov	.182**	.010	076	096*	.169**	.382**	012	.158**	005	004	I				
12. Comp	.154**	.016	.002	026	.093	.370**	115	.289**	011	.172**	.517**				
13. Mntr	050	.194**	.265**	.317**	290**	.032	.205**	.080	268*	109*	.242**	.569**	I		
14. Cntrl	014	.209**	.214**	.359**	285**	.007	.344**	114**	530**	215**	.340**	.453**	.587**	I	
15. Indp	.035	.056	.130**	.014	025	.056	.129**	.146**	.431**	.054	091	212**	197**	306** -	
<i>Note</i> . HghAut =	: High Auto	nomy Orier	ntation; Slgl	htCntr = Sli	ightly Cont	rolling; Mo	dCntrl = M	oderately C	ontrolling;	HghCntrl =	Highly Co	ntrolling; Pl	S = Proble	ms in Sch	00
Composite Sci	ore; Mstry =	= Mastery G	Soal Orienta	ition; CndR	gd = Use c	of Condition	nal Regard;	Effcy = Ef	ficacy for H	Homeschooli	ng; Engmn	t = Parent	Perception	of Acader	mic
Engagement;	$VdStftn = N_{i}$	eed Satisfac	tion; TEACH	ING STRATE	EGIES SCALE	: Aut_Mot	= Support f	or Autonom	ious Motiva	ation; Comp	= Support	for Compete	ence; Mntr	= Monitori	ing;
Cntrl = Use of	^c Control; In	dp = Studei	nt Independ	lence.											
* <i>p</i> < .05. ** <i>p</i> <	.01.														

Table 3. Correlation among variables.

five-cluster solution. A double-split cross validation indicated the five-cluster solution was stable (Breckenridge, 2000).

Figure 1 presents the final-cluster solution. The *y*-axis in the figure represents *z* scores on the support for autonomy, competence, and relatedness proxies. The distance between the cluster means and the total sample standardized means, in standard deviation units, can be interpreted as effect sizes (Scholte, van Lieshout, de Wit, & van Aken, 2005) similar to Cohen's *d*, .2 *SD* is a small effect, 0.5 *SD* is a medium to moderate effect, and 0.8 *SD* is a large effect (Vansteenkiste et al., 2009). Profile 1 represents the High Need Support motivational profile (n = 131, 29%) and is characterized by high autonomy support (large effect), high mastery support (large effect), and low use of conditional regard (large effect). Profile 5 (n = 49, 11%) represents the Low Need Support motivational profile, with large effect sizes for control orientation, use of conditional regard, and low mastery orientation.

The three Mixed Need Support groups were characterized by the following differences: Profile 2 represents a Low Competence Support motivational profile (n = 86, 19%), characterized by a moderate autonomy orientation (small effect), modest use of conditional regard (small effect), and low mastery goal orientation (large effect). Profile 3 represents a Moderate Competency Support motivational profile (n = 103, 23%), characterized by a slight control orientation, moderate use of conditional regard (moderate effect) and moderate mastery goal orientation (moderate effect) and moderate and profile (moderate effect) and moderate effect) and moderate mastery goal orientation (moderate effect) and moderate mastery goal orientation (moderate effect) and moderate effe



Figure 1. Final cluster solution.

effect). Profile 4 represents a Low Autonomy Support motivational profile (n = 88, 19%), characterized by moderate control orientation (moderate effect), moderate conditional regard (small to medium effect) and slight mastery orientation.

Before proceeding with further analyses, we evaluated whether the gender and grade-level categories for the child of interest were evenly distributed among the groups. Both chi-square tests were nonsignificant. Descriptive statistics for the clusters and results of follow up analyses are presented in Table 4.

Need satisfaction, efficacy, and academic engagement

ANOVAs for parent need satisfaction, efficacy for homeschooling, and perception of student academic engagement suggested meaningful differences between the profiles. Parents in the High Need Support profile differed significantly from all other profiles on need satisfaction

	Group 1	Group 2	Group 3	Group 4	Group 5		
	<i>n</i> = 131	n = 86	<i>n</i> = 103	<i>n</i> = 88	n = 49		
Variable	(29%)	(19%)	(23%)	(19%)	(11%)	F	η^2
Cluster dimensions						F(4, 452)	
PIS	0.94 _a	0.18 _b	-0.10 _b	-0.70 _c	-1.36 _d	141.48***	.56
Mastery	0.77 _a	-1.23 _c	.57 _a	-0.06 _b	-1.01 _c	261.85***	.70
Conditional regard	-0.82 _a	-0.22 _b	.72 _c	-0.41 _b	1.80 _d	202.83***	.64
External variables						F(4, 424, 452, 442)	
Need satisfaction	6.26 _a	5.77 _b	5.93 _b	5.97 _b	5.03 _c	37.05***	.26
Efficacy	6.42 _a	5.84 _b	6.17 _{a.b}	6.27 _a	5.40 _c	13.93***	.12
Academic engagement	4.21 _a	3.95 _{a,b}	3.90 _b	3.99 _{a,b}	3.58c	13.74***	.11
Teaching practices		·				F(4, 369)	
Autonomous motivation	4.63 _a	3.75 _b	4.30 _{a.c}	4.00 _{b.c}	4.12 _{b.c}	9.17***	.10
Control	3.10 _a	3.41 _{a,b}	3.99 _{b,c}	3.59 _{a,b}	4.26 _c	10.09***	.10
Competence	5.76 _a	5.29 _b	5.75a	5.57 _{a,b}	4.83 _c	9.77***	.10
Monitoring	3.80 _a	4.12 _{a,b}	4.39 _b	4.48 _b	4.35 _{a,b}	4.48**	.05
Independence	4.69 _{a,b}	4.34 _a	4.65 _{a,b}	4.35 _a	5.16 _b	3.39**	.04
Conventional materials	3.08 _a	3.70 _{a,b}	3.58 _{a,b}	3.85 _{a,b}	4.49 _b	4.40**	.04
Takes college classes	1.75 _a	1.24 _a	1.77 _a	1.33 _a	3.34 _b	16.34***	.14
Private/public school	1.59 _a	1.28 _a	1.39 _a	1.54 _a	2.83 _b	10.43***	.10
classes							
You set deadlines	3.50 _a	4.06 _a	4.70 _b	4.72 _b	4.60 _b	10.59***	.10
Student takes a test	3.34 _a	3.89 _{a,b}	3.58 _{a,b}	3.97 _{b,c}	4.51 _c	7.60***	.07
Praise student for	5.49 _{a,b}	5.05 _b	5.68 _{a,b}	5.67 _{a,b}	4.90 _b	4.81***	.05
progress							

Table 4. Z Scores of the cluster dimensions and means of external variables and teaching practices factors and variables together with *F* values and effect sizes.

Note. Cluster means are significantly different if they have different subscripts. PIS = Problems in School Composite Score.

p < .01. *p < .001.

344 👄 D. A. BELL ET AL.

(M = 6.26) and reported the highest academic engagement (M = 4.21) and efficacy for homeschooling (M = 6.42), reaching significance with some but not all groups. Parents in the Low Need Support profile reported significantly lower need satisfaction (M = 5.03), student academic engagement (M = 3.58), and efficacy for homeschooling (M = 5.40) than all other motivational profiles. Among the Mixed Need Support profiles, the Profile 2 (Low Competence Support) reported significantly lower efficacy for homeschooling than Profile 4 (Low Autonomy Support).

Teaching practices among the motivational rofiles

Wilk's lambda for the MANOVA with cluster membership as the independent variable and the five factors extracted from the teaching practices measure (Autonomous Motivation, Control, Competence, Monitoring, and Independence) as dependent variables was significant, F(4, 369) = 10.82, p < .001, $\eta^2 = .13$. Follow-up univariate *F* values showed groups differed significantly on all five factors: support for autonomous motivation, F(4, 369) = 9.17, $p < .001, \eta^2 = .09$; support for competence, $F(4, 369) = 9.77, p < .001, \eta^2 = .10$; use of external control, F(4, 369) = 10.09, p < .001, $\eta^2 = .10$; monitoring, F(4, 369) = 4.48, $p < .01, \eta^2 = .05$; and student independence, $F(4, 369) = 3.38, p < .01, \eta^2 = .04$. Tukey's post hoc comparisons showed the High Need Support parents reported the highest mean scores for support for autonomous motivation (M = 4.64), reaching significance with Profiles 2, 4, and 5; and support for competence (M = 5.76), reaching significance with Profiles 2 and 5. These parents also reported the lowest use of external control (M = 3.10) and practices intended to monitor student progress (M = 3.80), reaching significance with Profiles 3 and 5 and 3 and 4, respectively. The Low Need Support parents reported significantly lower support for competence than all other groups (M = 4.84), along with the highest use of external control (M = 4.26), differing statistically from all profiles except Profile 3. These parents were also most likely to report a student functioning independently (M = 5.16).

Demographic characteristics of the motivational profiles

A comparison of the continuous demographic variables is reported in Table 5. No significant differences were reported among the profiles except for religious activity, F(4, 428) = 4.49, p < .01, $\eta^2 = .04$, political leanings, F(4, 428) = 6.03, p < .05, $\eta^2 = .05$ and work concurrent with homeschooling, F(4, 428) = 7.28, p < .01, $\eta^2 = .06$. The High Need Support parents reported less religious activity and were more left-leaning politically than all groups, reaching significance with Profiles 2 and 4. The Low Need Support parents reported significantly higher hours of work per week than all other groups. And while it did not reach significance, the

	Group 1	Group 2	Group 3	Group 4	Group 5		
	n = 110	n = 77	n = 92	n = 79	n = 44		
Variable	(29%)	(19%)	(23%)	(19%)	(11%)	F(4, 428)	η²
Religious activity	3.86 _a	4.49 _b	4.26 _{a,b}	4.63 _b	4.28 _{a,b}	4.49**	.04
Political leanings	3.23 _a	3.74 _b	3.59 _{a,b}	3.84 _b	3.58 _{a,b}	6.03**	.05
Work concurrent with	2.15 _a	2.16 _a	2.16 _a	1.65 _a	3.20 _b	7.28***	.06
homeschooling							
Degree of monitoring	2.19	2.29	2.03	2.42	2.61	2.23	.02
Years homeschooling	4.02	4.17	3.97	4.15	4.02	.415	.00
Household income	3.68	4.01	3.70	3.53	3.96	2.14	.02
Level of education	5.32	5.38	5.47	5.22	5.50	.630	.00
Number of children	2.62	3.02	2.72	2.88	2.52	3.17	.03

Table 5. Significant and nonsignificant continuous variables among groups.

Note. Means are significantly different if they have different subscripts. **p < .01. **p < .001.

Low Need Support parents also reported the highest degree of external monitoring.

The remaining categorical variables were entered into crosstabs for chi-square testing. These included gender of the parent teacher, homeschooling a special needs child, and holding a teaching certificate. Only the chi-square test for the gender of the teaching parent had a significant group effect, χ^2 (4, 434) = 72.32, p < .001, Cramer's V = .41. Close inspection of the percentages revealed that males were overrepresented in the Low Need Support profile (n = 17, 58% of males in this study). However, this finding must be interpreted with caution, as less than five males were reported in each of the other four groups.

We also conducted an independent sample t-test for need satisfaction and efficacy for homeschooling on the basis of gender of teaching parent. The Levene's test for homogeneity of variance was significant, p < .05. Need satisfaction for females (M = 5.96, SE = .032) was significantly higher than males (M = 4.9, SE = .154), t (28.34) = 6.47, p < .001, which represented a large effect r = .77. Females (M = 6.16, SE = .043) also had significantly higher efficacy for homeschooling than males (M = 5.46, SE = .207); t (30.55) = 3.35, p < .001, r = .52, also considered a large effect.

The correlations between student engagement and the grade of the student of interest and the number of years the student had been homeschooled were both positive with relatively moderate effect (r = .351, .286; p < .01). Finally, we conducted an independent sample t-test for school engagement on the basis of gender of the child of interest. Overall, parents reported significantly higher student engagement scores, t (438) = 3.24, p < .001, for female students (M = 4.07, SE = .036) than male students (M = 3.9, SE = .038). This represented a small effect, r = .16.

Discussion

In the last 25 years homeschooling has become a fixture of the U.S educational landscape. State legislation that legalized this option did little to dictate parental curricular choices or teaching practices. Concurrently, classroom teachers have been subjected to ever-increasing external control, high stakes testing, and adherence to core standards—conditions self-determination theorists have cautioned can undermine the development of students' autonomous motivation for learning. Further concerning are studies that show students' academic engagement declines overtime in conventional settings (Eccles & Roeser, 2010; Meece & Schaeffer, 2010; Planty et al., 2008). This dichotomy gave rise to our interest in investigating support for achievement motivation in a homeschool context.

The parents in our sample reported little to no monitoring of their program by outside authorities. Thus, they were ostensibly free from the external sources of surveillance, pressure, and constraints SDT research postulates may contribute to the controlling practices that undermine autonomous motivation in conventionally educated students. Inferentially then the practices that characterized this sample may be assumed to emanate from underlying psychological processes such as, the beliefs, values, and needs of the primary teaching parent.

In this context, it is significant that overall, this sample of highly experienced, highly efficacious, and highly committed homeschool parents endorsed a highly autonomous motivational orientation on the PIS, high mastery goal orientation, and low use of conditional regard. Further this correlated with high parental need satisfaction on all subscales: autonomy, relatedness, and competence. As theory would predict, these in turn were moderately and positively correlated with student academic engagement. Perhaps more significant, the child of interest held in mind for the academic engagement measure—in contrast with the reverse findings among conventionally educated students—indicated higher academic engagement the longer a child was homeschooled and the higher his or her reported grade level.

Our study may also add further insight to the findings in Cai and colleagues (2002). That study showed religiously motivated homeschool parents endorsed a more controlling motivational style on the PIS (M = 2.44; SD = 2.81) than public school teachers (M = 4.67; SD = 2.82). Using the same scoring procedure reported in Cai and colleagues (2002), our sample of parents endorse a more autonomy supporting motivational style (M = 4.7; SD = 2.97). A comparison of descriptive statistics in Cai and colleagues suggests that our larger sample of homeschool parents had homeschooled longer (65% of our sample reported homeschooling five or more years; Cai and colleagues reported a mean of 3.7 years), taught at higher grade levels (50% of parents in our study reported homeschooling at high school grades in comparison with 14% in Cai

and colleagues), were more highly educated (70% of parents in our study held a bachelor degree or higher, parents in Cai and colleagues reported less formal education than the public school teachers), and reported less religious motivation for homeschooling (see Table 1). We revised the PIS twice in order to achieve acceptable internal reliability scores. In particular, several vignettes were rewritten to be more meaningful to a homeschool setting. This also may explain some of the differences in scores.

Further insight is gleaned from examining the teaching practices that characterized the homeschools represented in this study. In general, parents reported frequent use of the strategies self-determination theorists have recommended classroom teachers adopt to promote autonomous motivation: They use age-appropriate materials other than textbooks, allow the student the freedom to manage his or her own time, talk with the student about things he or she is learning, encourage questions, take the student's preferences into consideration, encourage the pursuit of the student's own interests, and frequently praise the student for his or her progress. Conversely, they are less likely to use strategies associated with control, and which undermine autonomous motivation: They do not use rewards or loss of privileges as an incentive for doing work, they are less likely to give tests or set deadlines, they infrequently point out areas that need to improve or address unacceptable behavior, and they are not likely to set a schedule for the student to follow.

The antecedents of these outcomes nor the interactions that are suggested by these central tendencies cannot be untangled from this study. But these correlations give a rare picture of a context where teachers were free to adapt their motivational approach and teaching practices in response to the needs and preferences of the child. It appears many parents in this study are doing just that, and they perceive their children as being highly academically engaged along the dimensions associated with autonomous motivation. That this dynamic has been found in a natural learning environment where at least parents, if not students, are unconstrained, lends credence to selfdetermination theory's humanistic claim that the human organism actively seeks integration and optimal functioning through the satisfaction of the need for autonomy, competence, and relatedness (Deci & Ryan, 2002).

There were fewer differences that emerged among the groups at the family-, parent-, and child-levels than anticipated. This is likely due to the overall similarities this sample shared in common; that is, highly educated, well-off, large families. The most surprising and significant differences were based on the gender of the teaching parent. Male teaching parents were significantly outnumbered in this study because, as documented elsewhere, females are far more likely to be the teaching parent. However, the high use of control associated with the group overrepresented by men, the hours worked concurrent with homeschooling, and the low need satisfaction reported by all men across the groups suggests these sources of psychological stress may reduce the time and energy male teaching parents have to promote autonomous motivation (Marjoribanks, 2002; Schneider & Coleman, 1993). Further, because of their minority status within this population, they may feel marginalized and may encounter obstacles to integration and support within the homeschool community.

It is also interesting to note the distribution of the types of homeschools found; for example, the High Need Support as the largest single cluster (29%), the three Mixed Need Support groups taken as a whole representing the most common condition (61%), and the Low Need Support cluster representing only slightly more than 10% of this sample. One likely explanation is homeschool parents who experience high need satisfaction and desired outcomes in their children, persist in homeschooling; those who don't, quit (and are therefore underrepresented here.) The option to opt out is not readily available to teachers, parents, or students in conventional settings so the prevalence of extrinsically motivated students in that context and less desirable outcomes is not surprising. Therefore, these results cannot be construed to mean homeschooling is a more efficacious context for learning. Rather, it may explain why homeschooling is efficacious when it is so. This interaction between parental need satisfaction and student academic engagement is a dynamic that warrants further investigation and may have more explanatory power than consideration of parental motivations for homeschooling as to why homeschooling is surging.

The final goal of this study was to extend self-determination theory to this important emerging learning context; one, ostensibly suited for examining some of the assumptions SDT researchers may not be able to test in more conventional settings. The SDT measures adapted for use with this sample had sound psychometric properties and findings are consistent with SDT results elsewhere, extending the universality and robustness of this particular theoretical paradigm.

Further, it is noteworthy that many participants reported in unsolicited follow-up e-mails, they enjoyed completing this study and found the survey questions thought provoking. Some even stated they recognized patterns in their teaching practices they planned to change. Participants frequently thanked us for giving them this opportunity to talk about their teaching practices and experiences; and no small number ask to know more about how they might promote achievement motivation in their homes. These comments contribute to the practical significance of these results and also the utility of self-determination theory as a lens for examining homeschools and distinguishing meaningful differences among them.

Notes

- 1. The slight control subscale of the PIS had a less than satisfactory reliability (a = .67). However, following Reeve's recommended scoring procedure (Reeve, Bolt, & Cai, 1999), this subscale on the PIS is effectively canceled out.
- 2. These correlations among the variables used for the cluster analysis also met the recommended relationship among variables for performing a MANOVA (e.g., high, negative correlations or moderate correlations in either direction; Tabachnick & Fidell, 2007).

References

- Assor, A., Roth, G., & Deci, E. L. (2004). The emotional costs of parents' conditional regard: A Self-Determination Theory analysis. *Journal of Personality*, 72(1), 47–88.
- Breckenridge, J. N. (2000). Validating cluster analysis: Consistent replication and symmetry. Multivariate Behavioral Research, 35(2), 261–285.
- Brophy, J. (1999). Toward a model of the value aspects of motivation in education: Developing appreciation for. *Educational Psychologist*, 34(2), 75-85.
- Brophy, J. E. (1985). Teacher-student interaction. In J. B. Dusek (Ed.), *Teacher expectations* (pp. 303–328). Hillsdale, NJ: Erlbaum.
- Cai, Y., Reeve, J., & Robinson, D. (2002). Home schooling and teaching style: Comparing the motivating styles of home school and public school teachers. *Journal of Educational Psychology*, 94(2), 372–380.
- Deci, E., Schwartz, A., Sheinman, L., & Ryan, R. (1981). An instrument to assess adults' orientations toward control versus autonomy with children: Reflections on intrinsic motivation and perceived competence. *Journal of Educational Psychology*, 73(5), 642–650.
- Deci, E. L., & Ryan, R. M. (1985). Intrinsic motivation and self-determination in human behavior. New York, NY: Plenum.
- Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11(4), 227–268.
- Deci, E. L., & Ryan, R. M. (2002). Self-determination research: Reflections and future directions. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination theory research* (pp. 431–441). Rochester, NY: University of Rochester Press.
- Eccles, J. (1993). School and family effects on the ontogeny of children's interests, selfperceptions, and activity choice. In J. Jacobs (Ed.), *Nebraska symposium on motivation: Developmental perspectives on motivation* (Vol. 40, pp. 145–208). Lincoln, NE: University of Nebraska Press.
- Eccles, J. S., & Midgley, C. (1989). Stage-environment fit: Developmentally appropriate classrooms for young adolescents. *Research on Motivation in Education*, *3*, 139–186.
- Eccles, J., & Roeser, R. (2010). An ecological view of schools and development. In Meece, J., & Eccles, J. (Eds.), *Handbook of research on schools, schooling and human development*. New York, NY: Routledge.
- Eccles, J. S., Adler, T. F., Futterman, R., Goff, S. B., Kaczala, C. M., Meece, J. L., & Midgley, C. 1983. Achievement and achievement motivation. In J. T. Spence (Ed.), *Expectancies, values and academic behaviors* (pp. 75–146). San Francisco, CA: Freeman.
- Fan, X., & Chen, M. (2001). Parental involvement and students' academic achievement: A meta-analysis. *Educational Psychology Review*, 13(1), 1–22.

- 350 👄 D. A. BELL ET AL.
- Gaither, M. (2009). Homeschooling in the USA: Past, present and future. *Theory and Research in Education*, 7(3), 331–346.
- Gore, P. A., Jr. (2000). Cluster analysis. In H. E. A. Tinsley & S. D. Brown (Eds.), *Handbook of applied multivariate statistics and mathematical modeling* (pp. 297–321). San Diego, CA: Academic Press.
- Grolnick, W. S., Gurland, S. T., Jacob, K. F., & Decourcey, W. (2002). The development of self-determination in middle childhood and adolescence. In A. Wigfield & J. S. Eccles (Eds.), *Development of achievement motivation* (pp. 147–171). San Diego, CA: Academic Press.
- Grolnick, W. S., Kurowski, C. O., & Gurland, S. T. (1999). Family processes and the development of children's self-regulation. *Educational Psychologist*, 34, 3-14.
- Grolnick, W. S., & Ryan, R. M. (1987). Autonomy in children's learning: An experimental and individual difference investigation. *Journal of Personality and Social Psychology*, 52, 890–898.
- Grolnick, W. S., & Ryan, R. M. (1989). Parent styles associated with children's self-regulation and competence in schools. *Journal of Educational Psychology*, 8, 143–154.
- Gutman, L., Sameroff, A., & Eccles, J. (2002). The academic achievement of African American students during early adolescence: An examination of multiple risk, promotive, and protective factors. *American Journal of Community Psychology*, *30*, 367–399.
- Hair, J. R., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). *Multivariate data analysis*. New York, NY: Macmillan.
- Home School Legal Defense Association. (2001, October 2). Homeschooling expands around the globe. *HSLDA News*. Retrieved from http://www.hslda.org/hs/international/200110020. asp.
- Isenberg, E. (2007). What have we learned about homeschooling? *Peabody Journal of Education*, 82(2-3), 387–409.
- Kaplan, A., & Maehr, M. (2007). The contributions and prospects of goal orientation theory. *Educational Psychological Review*, 19, 141–184.
- Kaplan, A., Middleton, M. J., Urdan, T., & Midgley, C. (2002). Achievement goals and goal structures. In C. Midgley (Ed.), *Goals, goal structures and patterns of adaptive learning* (pp. 21–53). Mahwah, NJ: Lawrence Erlbaum.
- Knowles, J. G. (1991, April 3–7). Now we are adults: Attitudes, beliefs, and status of adults who were home-educated as children. Paper presented at the Annual Meeting of the American Educational Research Association, Chicago, IL.
- Kunzman, R. (2009). Write these laws on your children: Inside the world of conservative Christian homeschooling. Boston, MA: Beacon Press.
- Marjoribanks, K. (2002). Family and school capital: Towards a context theory of students' school outcomes. Dordrecht, The Netherlands: Kluwer Academic.
- Meece, J. & Schaefer, V. (2010). Schools as a context of human development. In Meece, J., & Eccles, J. (Eds.), *Handbook of research on schools, schooling and human development*, (pp. 3–5). New York, NY: Routledge.
- Midgley, C., Feldlaufer, H., & Eccles, J. (1989). Change in teacher efficacy and student selfand task-related beliefs in mathematics during the transition to junior high school. *Journal* of *Educational Psychology*, 81(2), 247–258.
- Midgley, C., Maehr, M. L., Hruda, L. Z., Anderman, E., Anderman, L., Freeman, K. E., & Urdan, T. (2000). *Manual for the patterns of adaptive learning scales*. Ann Arbor, MI: University of Michigan.
- Milligan, G. W., & Cooper, M. C. (1985). An examination of procedures for determining the number of clusters in a data set. *Psychometrika*, 50, 159–179.

- Niemiec, C. P., & Ryan, R. M. (2009). Autonomy, competence, and relatedness in the classroom: Applying self-determination theory to educational practice. *Theory and Research in Education*, 7(2), 133–144.
- Patrick, H., Ryan, A. M., & Kaplan, A. (2007). Early adolescents' perceptions of the classroom social environment, motivational beliefs, and engagement. *Journal of Educational Psychology*, 99(1), 83.
- Pintrich, P. R., & Schunk, D. H. (2002). *Motivation in education: Theory, research, and application* (2nd ed.). Englewood Cliffs, NJ: Merrill-Prentice-Hall.
- Planty, M., Provasnik, S., Hussar, W., Snyder, T., Kena, G., Hampden-Thompson, G., ... & Choy, S. (2007). The Condition of Education, 2007. NCES 2007-064. National Center for Education Statistics.
- Planty, M., Hassar, W., Snyder, T., Kena, G., Dinkes, R., Kewal Ramani, A., et al. (2008). The conditions of education 2008 (NCES 2008-31). Washington, D.C.: National Center for Educational Statistics, Institute of Education Sciences, U.S. Department of Education. Retrieved from http://nces.ed.gov
- Princiotta, D., & Bielick, S. (2006). Homeschooling in the United States: 2003 (p. 2005). Washington, DC: (NCES 2006-042) U.S. Department of Education. National Center for Education Statistics.
- Ray, B. (2002). Customization through homeschooling. Educational Leadership, 59(7), 50-54.
- Ray, B. (2005). A homeschool research story. In B. S. Cooper (Ed.), *Home schooling in full view: A reader* (pp. 1–19). Greenwich, CT: Information Age.
- Reeve, J. (2002). Self-determination theory applied to educational settings. In E. L. Deci, & R. M. Ryan (Eds.), *Handbook of self-determination theory research* (pp. 183–203). Rochester, NY: University of Rochester Press.
- Reeve, J. (2009). Why teachers adopt a controlling motivating style toward students and how they can become more autonomy supportive. *Educational Psychologist*, 44(3), 159–175.
- Reeve, J., Bolt, E., & Cai, Y. (1999). Autonomy-supportive teachers: How they teach and motivate students. *Journal of Educational Psychology*, 91(3), 537–548.
- Reeve, J., & Jang, H. (2006). What teachers say and do to support students' autonomy during a learning activity. *Journal of Educational Psychology*, *98*, 209–218.
- Ryan, R. M. (1995). Psychological needs and the facilitation of integrative processes. *Journal of Personality*, 63(3), 397–427.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development and well-being. *American Psychologist*, 55, 68–78.
- Ryan, R. M., & Deci, E. L. (2002). Overview of self-determination theory: An organismic dialectic perspective. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self determination research*. Rochester, NY: University of Rochester Press.
- Schneider, B., & Coleman, J. S. (1993). Parents, their children, and schools. Boulder, CO: Westview Press.
- Scholte, R. J., van Lieshout, C. M., de Wit, C. M., & van Aken, M.G. (2005). Adolescent personality types and subtypes and their psychosocial development. *Merrill-Palmer Quarterly*, 51, 258–286.
- Skinner, E., & Belmont, M. (1993). Motivation in the classroom: Reciprocal effects of teacher behavior and student engagement across the school year. *Journal of Educational Psychology*, 85, 571–581.
- Tabachnick, B. G., & Fidell, L. (2007). Using multivariate statistics (5th ed.). Boston, MA: Allyn & Bacon.
- Tan, P. N., Steinbach, M., & Kumar, V. (2006). *Introduction to data mining*. Boston, MA: Addison-Wesley.

- 352 👄 D. A. BELL ET AL.
- Van Galen, J. A. (1988). Ideology, curriculum, and pedagogy in home education. *Education and Urban Society*, 21, 52–68.
- Vansteenkiste, M., Sierens, E., Soenens, B., Luyckx, K., & Lens, W. (2009). Motivational profiles from a self-determination perspective: The quality of motivation matters. *Journal* of *Educational Psychology*, 101(3), 671–688.
- Ward, J. (1963). Hierarchical grouping to optimize an objective function. *Journal of the American Statistical Association*, 58, 236–244.
- Weinstein, R. S. (1989). Perception of classroom processes and student motivation: Children's views of self-fulfilling prophecies. In R. E. Ames & C. Ames (Eds.), *Research on motivation in education* (Vol. 3, pp. 187–221). New York, NY: Academic Press.

Appendix

Table A1. Descriptives for Teaching Practices Survey.

Frequency of use since beginning of the school year with child of interest: 1 = never, 2 = once or twice, 3 = once or twice per month, 4 = once a week, 5 = several times per week, 6 = once a day, 7 = several times a day.

Item	Ν	M (SD)	Skewness	Kurtosis	Alpha
This student:					
uses resources designed for a conventional school	444	3.6 (2.1)	.117	-1.42	
uses resources designed primarily for a home school	446	5.6 (1.8)	-1.297	.758	
takes college classes locally (e.g., not online)	448	1.8 (1.6)	1.874	1.964	
takes classes at a local private or public school	448	1.6 (1.5)	2.111	2.971	
participates in co-op classes or other group learning	448	3.6 (1./)	351	904	
uses age-appropriate literature and nonfiction (i.e., other than textbooks)	445	6.1 (1.3)	-1.449	2.127	
takes a test	448	3.8 (1.4)	237	235	
You:					
set deadlines	448	4.2 (1.7)	209	738	
praise student for his or her progress	443	5.4 (1.4)	519	181	
provide student with the opportunity to work with others	442	4.5 (1.4)	318	.086	
work collaboratively with the student on a task	446	4.5 (1.7)	205	821	
show student how to complete an academic task	444	4.4 (1.8)	162	993	
This student (INDEPENDENCE SCALE):					
participates in classes conducted online	445	3.4 (2.3)	.284	-1.55	.74
self-checks his or her work	447	4.7 (2.1)	611	896	
uses materials or activities found online	447	5.3 (1.6)	830	.031	
uses a tutor or teacher other than you	447	3.7 (2.0)	243	-1.23	
is responsible for managing his or her time	447	6.1 (1.7)	-1.97	2.80	
You (MONITORING SCALE):					
show student how to answer problems in the text	444	4.3 (1.8)	158	883	.85
assign academic work for the student to complete	444	4.8 (1.8)	563	565	
enforce deadlines	443	4.2 (1.8)	277	772	
grade the student's work	445	4.0 (2.0)	139	-1.171	
give tests	448	3.3 (1.5)	031	770	
evaluate the student's work	445	4.8 (1.6)	321	507	
set a schedule for the student to follow	446	3.8 (1.8)	.016	-1.04	
You (AUTONOMOUS MOTIVATION SCALE):					
let student choose his or her books or activities	447	4.7 (1.9)	383	877	.78
encourage student to pursue his or her interests	445	5.3 (1.5)	594	393	
use projects to promote learning	445	3.7 (1.7)	.387	-584	
take a field trip related to academic work	448	2.7 (1.1)	1.247	2.826	
ask student what he or she would like to study or do	441	4.0 (1.7)	.410	886	
take student's preferences into consideration	440	4.8 (1.7)	211	-1.123	
explain the reason for learning the material	443	4.2 (1.7)	.102	906	
You (SUPPORT FOR COMPETENCE SCALE):					
encourage the student to persist in his or her efforts	447	5.3 (1.4)	469	314	.83
encourage questions about what the student is learning	446	5.9 (1.2)	-1.05	.925	
give the student feedback on the quality of his or her work	448	5.1 (1.5)	_ 449	- 253	
talk with the student about things he or she is learning	444	61 (1.2)	-1.067	760	
ask the student to explain something he or she is learning	443	5.4 (1.3)	594	.032	
		-			

(Continued)

354 🔄 D. A. BELL ET AL.

Table A1. (Continued).

ltem	Ν	M (SD)	Skewness	Kurtosis	Alpha
You (EXTERNAL CONTROL SCALE):					
redirect student's attention back to his or her schoolwork	447	4.9 (2.0)	602	813	.86
use rewards as an incentive for doing work	447	2.6 (1.6)	1.003	.187	
use loss of privileges as an incentive for doing work	448	2.6 (1.6)	.975	.124	
address unacceptable student behavior	441	3.7 (1.9)	.342	986	
point out areas of academic work that need to improve	445	3.5 (1.5)	.312	390	
address negative attitudes	445	4.0 (1.7)	.199	962	

Copyright of Journal of School Choice is the property of Taylor & Francis Ltd and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.