

**TYPES OF HOME SCHOOLS AND NEED-SUPPORT FOR ACHIEVEMENT
MOTIVATION**

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ABSTRACT

Along many dimensions, homeschooling is increasing, diversifying, and spreading globally. Yet little is known about the motivational climates and teaching strategies parents have adopted to promote academic achievement and motivation within their homes. Working within a self-determination theory (SDT) framework, this study used cluster analysis to examine the naturally-occurring types of learning environments created by 457 homeschool parents. Measures of support for autonomy, mastery goal orientation, and conditional regard were adapted for a homeschool context and used as constituting variables. Follow-up measures of need satisfaction, efficacy, student academic engagement, teaching practices and demographics were used to identify significant differences among groups. A five cluster solution best fit the data: a *high need support* group, *low need support* group and three groups of *mixed need support*. In general, the *high need* and *mixed need support* groups 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* group 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 associated with the *low need support* group. Taken together, the findings extend self-determination theory to an important, emerging learning context. Results were consistent with findings in SDT research across other domains; thus, lending support to the universality of SDT's main tenets.

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DISCLOSURE

Like many researchers, I have a prior history with my population of interest. I have been a member of the homeschool community since the early 1980's and home educated my four children K-12. Three of my children's spouses were also homeschooled. Interestingly, my two daughters and a daughter-in-law are all public school teachers; as I was at one time. (And my parents are a retired public school teacher and administrator.)

I trace the genesis of my interest in homeschooling to an article I found in *Mother Earth News* in the high school library where I was teaching English entitled "Teach Your Own" by John Holt. (Prior to this a colleague, returning from a professional conference, declared John Holt, a leading educational reformer and speaker at the conference, as having gone off the deep-end. I realized the article explained what she was referencing.) My interest, however, was piqued and as soon as I left teaching to raise my family, I sought out the fledging homeschool community in Pennsylvania – I just followed the La Leche League crowd to find them.

The year my oldest (twin sons) began kindergarten; we spent many hours at the Pennsylvania Capitol lobbying our legislature for a repeal of the laws which were being used to fine and jail parents, and drive most homeschoolers we knew underground. We were in the gallery of the PA General Assembly in 1988 when both chambers in an unprecedented unanimous vote legalizing homeschooling in PA. The lawmakers then turned and gave a standing ovation to not just the parents present, but the scores of

school-age children (who were now no longer truant) as well. These early field trips probably explain why my sons are such political animals today.

As a certified teacher, I have evaluated hundreds of homeschool programs as required by law in PA; and traveled extensively as a speaker and educational consultant at homeschool conventions. Like Clayton Christensen, author of *Disrupting Class*, I believe the homeschool movement is at the vanguard of the much needed disruptive innovation in education. While the early adopters of homeschooling in the U.S. may represent polarizing segments of the broader culture (e.g., religious fundamentalists, left-leaning progressives); they may have unintentionally stumbled upon a possible path forward for all who are interested in seeing an individualized and optimized education available to all children; despite race, gender, creed or country of residence. Minimally, they have a story to tell worth considering for all who care about this noble ideal.

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CHAPTER 1 INTRODUCTION

The Problem

Along many dimensions homeschooling is increasing, diversifying, and spreading globally (Gaither, 2009b; Home School Legal Defense Association, 2001). In the U.S. an estimated 1.5 million children are taught at home (2.9% of the school-age population), representing a 36% jump since the last U.S. Dept. of Education data collection in 2003 (Planty et al., 2009). A 29% increase between 1999 and 2003 suggests growth is accelerating as well. Despite the expansion of market-driven initiatives; such as, vouchers and charter schools, the number of homeschooled students exceeds the combined enrollment in these (Apple, 2006; Fields-Smith & Williams, 2009). Lack of uniformity across states in reporting requirements (e.g., Pennsylvania does not require reporting prior to age eight; Indiana requires none) coupled with resistance among some homeschooling parents to government regulation suggests real numbers may be much higher (Bielick, Chandler, & Broughman, 2001; Kunzman, 2008; Ray, 2005). Though homeschooling is discouraged or prohibited in many countries (highlighted by a 2010 U.S. federal court decision to grant asylum to a German homeschooling family); the Home School Defense Association (HSLDA), an advocacy group, lists official organizations in more than 60 countries on its website and claims increase contact for their services around the world (hsllda.org).

In the U.S., minorities now make up 23% of those who report homeschooling (at least part time) and the age group with the most dramatic growth has shifted to the high school level (Princiotta & Bielick, 2006). This diversification is evident in the appearance

of Spanish-language versions of popular homeschooling curricula; special-interest support groups (e.g., Muslim, pagan, Afro centric, Native American) listed on major homeschool websites and the proliferation of high school level services. Some scholars further note the growing popularity of homeschooling among the “creative class”; e.g., elite athletes-in-training, Hollywood actors, gifted children (Gaither, 2009a; Winstanley, 2009). Increase access to scholastic sports and other opportunities once the exclusive province of public schools may partially account for the acceleration of homeschooled teens (Gaither, 2009a).

While religious motives still tops the list of reasons parents in the U.S. give for homeschooling, more than 70% list other factors including dissatisfaction with the school environment and quality of instruction; needs of children with exceptionalities; and conflicting family demands (such as travel, distance, finances, and schedule) (Planty et al., 2009). Similar data from Europe suggest religious motivations may not be playing as significant a role in the rise of homeschooling worldwide (Merry & Howell, 2009; Rothermel, 2003; Spiegler, 2004).

The wide-spread legalization of homeschooling in the U.S. may also explain the growth and changing nature of the movement. By the late 90’s all states in the U.S. had either legalized or relaxed their homeschooling laws. Earlier homeschool families either did so “underground” or engaged in the political activism necessary to bring about the changes in the laws (Stevens, 2001). Subsequent homeschoolers have not had to face such barriers, and this lowering of the bar to entry may influence the nature and motivation of the families who are now choosing to homeschool.

In addition, recent surveys have found a growing cultural acceptance of

homeschooling (Rose & Gallup, 2001; Stevens, 2003). Mitchell Stevens (2003), a sociologist who has produced the finest qualitative investigation of homeschooling as a social movement, asserts that the twin ideals of the homeschool movement—the individual distinctiveness of the child and public education’s inability to support that—have been broadly embraced by the public-at-large and account in part for the movement’s rapid cultural acceptance. The normalization of homeschooling is also seen in the dramatic reversal of college admissions standards for homeschooled students. Initially barred from many institutions of higher learning or required to take a battery of additional tests (including obtaining a GED), most now actively recruit homeschool graduates and have developed alternative assessments acceptable to the population in order to attract what many admissions officers have identified as “highly desirable” students (Jones & Gloeckner, 2004a).

Concurrently, technology has lowered the barriers, empowered parents, and facilitated collaboration (Coleman 2010; Isenberg, 2007). Clayton Christenson, whose theory of “disruptive innovation” is broadly applied in business, cites homeschooling as an early sign of the approaching disruptive reinvention of education itself (2008). U.S. Dept. of Education researcher, Patricia Lines, has called it one of the major social trends of the past fifty years. Hybrids mixing homeschooling with public, private and online options are blurring the boundaries and creating a new array of educational contexts (Gaither 2009b). Few regulations (nor the strictures of No Child Left Behind) restrict the range of practices homeschooling parents may adopt. Arguably the largest natural experiment in American education, this freedom allows for unimpeded innovation and experimentation not feasible in traditional settings. The question remains open, though, as

to how homeschooling parents may be using this expanse to configure appropriate learning environments for their children.

Surprisingly, scholarly interest in homeschooling as a context for learning and teaching is nil. To date, the primary sponsors of research have been HSLDA and National Home Education Research Institute (NHERI), both advocacy groups whose aim is the legalization and deregulation of homeschooling. Scholars from other disciplines have investigated homeschooling as a social and political movement; and interest has centered on parental motivations, demographics and student outcomes. To date only one study on homeschooling as a learning context (Cai, Reeve & Robinson, 2002) has appeared in a journal devoted to the field of educational psychology.

Yet, studies that compare achievement outcomes between homeschooled and conventionally-schooled students report extraordinarily high achievement test scores, ranging from 60% -85% on all subtests, on average (Ray, 2005, 2010; Rudner, 1999); and no significant differences based upon race, gender or income within the homeschool population, nor a decline in achievement among adolescents (persistent disparities among conventionally-educated students). While many scholars have criticized the methodological rigor of these studies (Apple, 2005; Belfield, 2004, Isenberg, 2007; Welner & Welner, 1999), most have concluded homeschooled students appear to do as well as their conventionally-educated peers. If these dramatic outcomes are, in fact, valid then it behooves researchers to examine how non-credentialed teaching parents are creating a learning context that may support student achievement, motivation and adjustment across domains and demographics. Further, it is expected that meaningful within-group differences exist among home schools. Identifying these may provide a

clearer picture of the characteristics of a home school setting which support student achievement and the characteristics which may, in fact, forestall it. To date, no empirical study has sought to identify these meaningful differences; nor examine the approaches to instruction, motivational climate and teaching strategies that distinguish them. The aim of the current study was to examine these distinctions along the axes of support for autonomy, competence and relatedness—the three inherent needs self-determination theory posits must be satisfied for the optimal development of achievement motivation.

In the remainder of this chapter I will clarify the meaning of homeschooling as a context for learning. Next I will briefly review the literature on socio-contextual factors that support student achievement, motivation and adjustment; and then present an argument for the use of self-determination theory as an interpretative lens for investigating the learning environment, teaching strategies and motivating style homeschooling parents have implemented. Finally, I will present the research questions this study sought to answer.

Defining the Phenomenon

In this study, the term *homeschooling* refers to the modern practice of parents assuming legal and financial responsibility for providing the education of their compulsory school age children, primarily in their homes. Educational contexts where children are at home, but enrolled in online public charter schools or other such umbrella organizations where the legal accountability does not primarily reside with parents were excluded. Participants were categorized as homeschoolers according to the definition used by the National Center for Educational Statistics: Children are considered

homeschooled if their parents report them as schooled at home for at least part of their education and not enrolled in a public or private school and if their part-time enrollment in public or private schools does not exceed 25 hours a week (Princiotta & Bielick, 2006). Families included in the sample may be using a blend of public, private or online services to fulfill a portion of their children's homeschooling program (Princiotta & Bielick, 2006); but parents fundamentally are directing the student's academic program (Ray, 2000). They have selected the curricula, control the learning context, and are legally accountable for the child's progress.

In identifying the types of learning environments parents have created, my aim was to provide a paradigm for later investigations of constructs of interest to the field of motivational science (e.g., self-regulation, goals, competence, efficacy, interest). However, before these constructs can be explored in a systematic and meaningful way, homeschooling as a context for learning and teaching must be better understood. Currently, student achievement motivation is a central focus of research in learning and teaching contexts, especially as it manifests across cultures and contexts (Pintrich, 2003). My study sought to extend this research to an important emerging context; one presumably with a significant degree of variation.

The unit of analysis was the primary teaching parent's reported teaching practices, motivating style and socio-contextual characteristics of the learning environment generalized across domains (e.g., math, science, language arts) available to the student they had homeschooled the longest. I did not examine the student's perceptions of the learning context; though that is an important phenomenon to understand. However, that was beyond the scope of this initial study. The variables I considered were those

associated with student achievement, motivation and adjustment in conventional settings. In particular, I used the constructs associated with self-determination theory, a macro theory of human motivation with robust findings across domains and contexts, as my theoretical lens.

Home Schools as a Context for Learning and Teaching

Home schools are qualitatively different from a conventional classroom setting, the presumptive context from which educational and developmental psychologists have derived most of our prevailing understanding of how children develop achievement motivation and other academic competencies. Investigating home schools as a context for learning and teaching affords researchers a unique opportunity to extend our understanding of the universality and situated boundaries of some of our most prominent theories and constructs. However, as a relatively new phenomenon on the educational landscape, a systematic topology of its characteristics and variations should be mapped.

A home school differs from a conventional setting along many dimensions – classroom teachers must meet the needs of many students; while homeschool parents are working with only a few; though often at multi-grade levels at once. Classroom teachers must also work within the prevailing structure and standards dictated by the local, state and federal agencies. Most homeschool parents enjoy relatively few external controls. The influence of the classroom teacher is bounded by the limits of the schoolroom and school day; homeschool parents may integrate (as many say they do) schoolwork into the natural rhythms of family life. Homeschool parents are free to contextualize learning and draw upon community-wide resources and materials. Classroom teachers often must

follow prescribed lesson plans, use district-wide adopted texts and focus on high-stakes testing as a primary agenda.

On the other hand, classroom teachers receive ongoing professional training, peer support and feedback about their teaching and students' academic progress. An array of resources are available to them should they encounter difficulties in classroom management or in fostering student achievement. Presumably, homeschool parents do not have easy access to similar levels of support or feedback. Additionally, homeschooling may add financial and psychological stressors to the family (e.g., a parent must leave the workforce; the home school must be financed; friends and family may oppose the decision.)

Whereas most classrooms in the U.S. must adapt to the multi-cultural demographics of their students, for better or for worse, teacher and students in a home school share a mono culture and integration into the culture-at-large may not necessarily be an objective.

Fundamentally, homeschool parents and the conventional field of educational studies can differ in their very definition of education, standards of success and desired outcomes. For example, many homeschool parents oppose standardized testing; do not assign grades to student work; may not use grade leveled curricula nor group their children according to age; and eschew peer-referenced assessments. Socially, some homeschool parents wish to preserve the family as the child's primary relational network across the lifespan and exercise considerable control over outside influences perceived as threatening family values and beliefs (Kunzman, 2008; Ray, 2004; Wyatt, 2008). Within some cultural groups of homeschoolers, differing expectations may be held for female

and male students (Kunzman, 2008). While recent data suggest growing diversification and less ideological motivation behind the decision to homeschool; historically, both conservative and progressive homeschoolers have framed their choice as a repudiation of the hegemony of the culture-at-large and public education specifically.

Finally the most distinct difference between a conventional and homeschool setting is the one that makes it a controversial and politically-charged choice: an ostensibly autonomous, non-credentialed teacher at the helm. Across learning contexts and cultures, and certainly within the field of educational research, it is almost universally assumed that children require professionally-trained teachers in order to acquire the academic skills and knowledge base necessary for optimal adjustment, acculturation and achievement. It is for this reason I believe a research agenda focused on understanding a home school context should begin by examining the pedagogue of these teaching parents before moving to an examination of the students who learn in this context.

Achievement Motivation as a Focus of Interest

The criteria for classifying and evaluating home schools must take into account the aforementioned differences between a home school and conventional learning context. Therefore, the focus of interest should not only be viewed as essential to the learning process; but also, meaningful to homeschooling parents.

Motivation has long been considered an essential part of the process of learning (Volet & Järvelä, 2001) and achievement motivation in particular is a prominent domain of interest to the field of educational psychology. Inferentially, the qualitative literature on homeschooling indicates that the development of achievement motivation is relevant

and meaningful to many homeschooling parents (whereas, other standards for evaluation; such as test scores, grades, and diplomas may not be). Homeschool parents have reported desiring children who love to learn, are creative and self-directed among their priorities (Kunzman, 2008; Stevens, 2003; Wyatt, 2008); other studies report a focus on mastery learning, tasks that are meaningful and exploration of a child's interests (Rothermel, 2003). Somewhat surprising, given the countercultural nature of the movement, homeschool graduates matriculate to institutions of higher learning in greater percentages than their peers (Ray, 2005). Presumably, then, homeschool parents are interested in supporting the development of the academic competencies and self-systems that prepare students for the independence and adaptability required for college success.

The field of motivational research investigates the environmental, psychological and cognitive processes that impel people to act (Kaplan, 2008; Wigfield, Eccles, Schiefele, Roeser, & Davis-Kean, 2006). In children, research has fundamentally focused on the development of achievement motivation; that is, motivation in contexts where performance standards are operative (Wigfield et al., 2006). Within the domain of education, motivational research is interested in the instantiation, intensity, persistence, direction and psychological qualities of this action as it relates to student academic engagement (Kaplan, 2008; Reeve, 2002; Wigfield et al., 2006). Individual differences along these dimensions of achievement motivation have partially accounted for differences in student achievement and adjustment in classroom settings.

A particular area of focus in the research has been the motivational antecedents of student "choice, persistence and effort" (Eccles, Wigfield, & Schiefele, 1998). Among those considered, parent and teacher behavior and socio-contextual characteristics have

generated substantial interest and research. One much studied construct has been the influence a parent's or a teacher's motivating style may play in promoting achievement motivation in students.

Parental Influence

Parents promote the development of interest and achievement motivation in their children through the socializing climate they create in their homes. When parents provide ample opportunity for academic engagement across time, they value academic achievement and expect this of their children, children exhibit higher levels of achievement motivation in school (Wigfield et al., 2006). Across domains (e.g., sociology, economics, psychology) research has shown that family demographics including, higher levels of income, parental education, parental occupations, and smaller family size positively correlate with high academic achievement in students. A central concern in the research has been the achievement gap between impoverished children and middle-class students learning in resource-rich and stable neighborhoods. Current research is focused on understanding how these family-level factors may mediate and moderate parental practices and beliefs in the academic domain (Wigfield et al., 2006). Theorists have posited that some 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). Other research has considered how anticipation of discrimination or the belief in limited access to conventional pathways to success (e.g., college admission, employment) may shift parental energy away from school achievement and toward other goals and interests (Fordham & Ogbu, 1986; Ogbu, 1985).

Homeschooling is on the rise among minorities, and advocates claim early research indicates no significant differences in academic outcomes among these groups and their White counterparts (Rudner, 1999; Ray, 2005).

In addition to demographic characteristics, researchers have considered how parenting style may influence the development of achievement motivation. Among the variables studied, researchers have identified a set of parenting characteristics positively associated with the development of achievement motivation. These include consistent emotional warmth, involvement and regard (e.g., Assor, Roth, & Deci, 2004; Connell, Halpren-Felsher, Clifford, Crichlow, & Usinger, 1995; Grolnick, Kurowski, & Gurland, 1999; Gutman, Sameroff, & Eccles, 2002); involvement in academic work (Eccles, 1993; Fan & Chen, 2001); developmentally-appropriate structure and challenge (Grolnick & Ryan, 1989; Grolnick, Kurowski, & Gurland, 1999); valuing and modeling achievement (Eccles, 1993) and an autonomy-supportive motivational style (i.e., one in which choice, problem-solving and shared decision-making is encouraged) (Grolnick & Ryan, 1989).

Teacher Influence

Certain teaching practices and beliefs have also been positively associated with the development of achievement motivation in students. Foremost in this literature is the influence a teacher's expectations for the individual student have on a student's motivation and sense of competency (Brophy, 1985; Eccles-Parsons et al., 1983; Weinstein, 1989). In addition, a teacher's own efficacy for promoting student learning (e.g., Lee & Smith, 2001; Midgley, Feldlaufer, & Eccles, 1989) and provision of socio-emotional support (Eccles & Midgley, 1989) are influential. Teaching practices that promote student autonomy (Deci & Ryan, 1985; Grolnick & Ryan, 1987) in combination

with appropriate structure (Skinner & Belmont, 1993; Grolnick et al., 2002) and challenge (Brophy, 1999; Pintrich & Schunk, 2002) have also been positively correlated with achievement motivation and school engagement.

An important area of broad research has been the classroom goal structure, particularly in the way this may affect student motivation and sense of competence. Teachers who orient classroom practice and culture around student improvement, effort and mastery promote achievement motivation and interest in their students (Roeser, Midgley & Urdan, 1996; Urdan, 2004). Conversely, teachers who emphasize peer comparisons, competition, and entity ability traits can undermine intrinsic motivation and interest, especially in children who do not believe they possess the competence necessary for success (Kaplan & Maehr, 2006).

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 as a Theoretical Framework

Motivational theorists have considered both the psychological and cognitive processes of the learner and the socio-contextual features of the learning environment associated with high achievement motivation and psychological well-being. The most robust models consider how contextual features and underlying psychological processes

may interact to promote or undermine student achievement. Theorists acknowledge that there are multiple pathways to these desired outcomes and students who develop adaptive motivation and strategies are those most likely to succeed. Prevailing theories in achievement motivation research that consider socio-contextual factors assume optimal motivation is supported when the individual's developmental and basic human needs are met (Wigfield et al., 2006).

Self-determination theory (SDT) (Deci & Ryan, 1985) is one such theoretical perspective based upon this assumption. SDT posits that three inherent human needs must be met for optimal human development, motivation and health: a need for autonomy, a need for competence, and a need for relatedness. SDT research has generated robust findings across contexts (e.g., athletics, workplace, school, family), cultures (e.g., Chirkov & Ryan, 2001; Vansteenkiste, Zhou, Lens, & Soenens, 2005), endeavors (parenting, education, work, relationships) and populations (e.g., young children, adolescence, adults) (Deci & Ryan, 2008).

SDT argues that optimal human development is fostered in social contexts that support one's innate psychological needs for autonomy, competence and relatedness. **Autonomy** refers to the need to perceive oneself as the locus of control of one's own behavior (Ryan & Deci, 2002) the value of which may be self-generated or an expression of one's endorsement of the value of the actions compelled by others. **Competence** is the need to feel capable in one's interactions with the social environment and to experience the opportunity to express one's capacities. The need for competence, SDT posits, leads individuals to seek out environments of optimal challenge. **Relatedness** is the need to feel socially connected and valued by others; to experience a sense of belongingness to

other individuals and to one's community (Ryan & Deci, 2002). The degree to which support for these three basic needs is undermined or promoted explains "within- and between-person differences in motivation and personal growth" (Ryan & Deci, 2000, p. 68.). The primary benefit, SDT asserts, of social contexts which support these inherent needs is the maintenance and enhancement of autonomous (or intrinsic) motivation; that is motivation that is self-generated out of interest and enjoyment or an endorsement of the benefits derived from a particular goal-directed behavior. SDT research has found the presence of autonomous motivation is strongly associated with persistence, performance and well-being across the lifespan (Ryan & LaGuardia, 2000). Parents and teachers can facilitate the development and maintenance of autonomous motivation in children by adopting an autonomy-supportive motivating style; mediated through the quality of their feedback, opportunities for optimal challenge, the presence of choicefulness, acknowledgement of feelings and opportunities for self-direction and self-endorsement of activities (Ryan & Deci, 2000). In contrast, parents and teachers undermine intrinsic motivation and psychological well-being, when they adopt a controlling motivating style that relies heavily on external regulation and evaluative pressure (Niemiec & Ryan, 2009). As such, SDT provides a theoretical matrix to investigate meaningful socio-contextual differences among types of home school.

The Current Study

Given the dynamic growth of this phenomenon, the opportunities for experimentation and adaptation, and the broader cultural concerns surrounding a home school learning environment; there are many questions of interest to educational and

developmental psychologists. This study investigated three that seemed most fundamental.

I examined home school environments along social-contextual, motivational characteristics and identified possible meaningful types of educational environments, their varied potential to support the development of adaptive motivation and psychological well-being; as well as, the instructional practices that were associated with each type of environment. The research questions for this study were as follows:

1. What naturally-occurring types of home schools may exist along the social-contextual dimensions of support for autonomy, competence and relatedness—three inherent needs self-determination theory posits as necessary for the development of autonomous motivation?
2. What teaching strategies characterize the types of home schools found in answering the first research question?
3. What family-level, parent-level and student-level factors are associated with the types of home schools found in answering the first research question?

Cluster analysis allowed naturally-occurring learning environments to emerge from the data rather than presupposing a paradigm *a priori* that may not exist in reality. This approach allowed a preliminary picture of the current pedagogical diversification within a homeschool sample to emerge conceptually. The follow-up analyses identified significant factors that may add to our understanding of why these differences may exist.

I will now turn to a review of the literature on homeschooling and an examination of self-determination theory's central constructs, relevant findings and theoretical assumptions.

CHAPTER 2 REVIEW OF THE LITERATURE

History of the Modern Homeschool Movement

The modern homeschool movement in the U.S. emerged in the late 1970's as a convergence of ideological forces from the cultural left and right. Progressives, led by educational reformer, John Holt, viewed the cultural homogenization and standardization of public education as stifling to a child's creativity and individualism (Farenga, 1999). Conservative evangelicals, led by former school superintendent, Dr. Raymond Moore and later Home School Legal Defense Association's (HSLDA) founder, Michael Farris, Esq., viewed schools as bastions of "secular humanism" and state-sponsored liberalism (Gaither, 2008).

As legal battles were won and inherent differences in values and educational philosophies made collaboration more difficult this alliance increasingly divided into two separate (and sometimes antagonistic) streams, with the Christian fundamentalists representing the dominant force (Stevens, 2001). The political muscle of the latter is exemplified in HSLDA's success in pressing Congress to amend the No Child Left Behind Act of 2001 to specifically exclude homeschoolers from its requirements (Smith, 2003). As a result, homeschool parents in the U.S. have considerable latitude in the pedagogical practices they may employ.

The Arc of Scholarly Interest

The first scholarly review of the movement appeared in *Phi Delta Kappan* in 1987. Patricia Lines (1987), an analyst for the U.S. Dept. of Education, reported on the variance in state regulation of homeschooling (then prohibited in nine states but trending towards reduced restrictions elsewhere) and her estimation of the population's size (100,000 – 120,000 children). Citing the time commitment and loss of second income this “tiny, countervailing trend” (p.511) required, she concluded the movement's rapid rate of growth had likely peaked. One telling observation may explain her underestimation of the movement's staying power: “The only unifying force homeschoolers share in common,” Lines wrote, “is the idea that parents should and can be deeply involved in the education and development of their children” (p 510). In contrast, Lines reported, homeschool parents' demographics, pedagogies, ideologies and motivations were widely varied.

Eighteen months later, Jan Van Galen (1988) published the results of her doctoral dissertation in *Education and Urban Society*. The second unifying tenet homeschoolers assert is first reported here: Government-sponsored schooling can and often is a threat to a child's healthy development.

Van Galen investigated as a participant observer the motivations and pedagogies of homeschooling families in a southeastern state over a period of 18 months. Working within a critical theory frame, Van Galen's study considered whether homeschooling represents a viable alternative to the inequities critical theorists contend are endemic to public education. She interviewed 10 state and local education officials and 23 parents from 16 homeschooling families in depth. As the movement was in its infancy, the

majority of parents interviewed had homeschooled less than three years. Thirteen of the families self-identified as conservative Christians. The remaining three had no religious affiliation. The ages of the children being schooled at home were not identified. Van Galen contextualized these parents' experiences by collecting and analyzing five years of prevalent homeschool newsletters, books and monographs. In addition she attended informational meetings, political rallies and homeschool events. The vignettes included from her field notes and parsimonious categorization of the families she encountered account for the enduring influence of her work. She classified homeschooling parents as "Ideologues" or "Pedagogues," and despite Lines' earlier evidence of the movement's complex landscape, Van Galen's dichotomous simplex stuck.

While acknowledging neither as a discrete category, Van Galen argued this dichotomy captured meaningful distinctions among homeschooling parents' motivations and values. Ideologues were "Christian fundamentalists" who objected to the content taught in public and private schools; and who intended to use homeschooling as a means of indoctrinating their children with their religious beliefs and conservative political and social values. Van Galen observed that parents in this group patterned their home schools after traditional schools. Many were enrolled in a correspondence course, and parents structured their child's day around textbooks and workbooks. They perceived their role as monitoring their child's adherence to the preset schedule dictated by the curriculum supplier and providing support only when the child encountered some procedural difficulty. Success was gauged by knowing their children were further ahead in the materials than age-mates in a formal setting. Van Galen found Ideologues provided their children with little opportunity for autonomy or critical evaluation of the content taught.

Conversely, Pedagogues were not so much in disagreement with the public school's content as they were with its methodology; they found evaluating a child's learning in terms of group norms of achievement particularly odious. Van Galen characterized this group of parents as those with professional training in education or a well-informed understanding of how children develop and learn. She observed that these parents strove to create an educational environment that was qualitatively different from conventional schools and expressed a strong commitment to a child's individuality and autonomy. These parents focused on experiential learning, experimented with various techniques and materials, and set the agenda according to their child's needs and interests. Further, these parents encouraged their children to critically evaluate the materials they encountered.

Van Galen observed that both groups of parents found common ground in their eschewing of government involvement in their parenting or education of their children; though Van Galen found Ideologues were more likely to join organizations and engage in political activism as an expression of their convictions.

While Van Galen's classification of homeschoolers was broadly adopted and only challenged of late, many scholars overlooked the outcome of Van Galen's study. As the Ideologues felt more successful in their teaching, they too began to question their beliefs about the nature of school and the constraints of a traditional curriculum. Over time, their definition of learning changed; and they allowed their children more freedom and autonomy. In short, with experience, the homeschooling parents in Van Galen's sample trended toward creating a more responsive learning environment for their children.

Home School Legal Defense Association (HSLDA) and National Home Education Research Institute (NHERI) also made their appearance on the scene in the mid-80's; noteworthy because both are advocacy groups that commissioned and produced, respectively, early research into homeschooling for the purpose of advancing its legalization in the U.S. Today HSLDA, which provides free legal services to its paying members, is focused on reducing government regulation of homeschooling stateside and the decriminalization of homeschooling worldwide. Dr. Brian Ray, president of NHERI, has published *The Home School Researcher* since 1990, and his research has appeared in a number of peer-reviewed journals. Both groups are strongly associated with the conservative, Christian end of the movement.

In 1991, Lines updated her research on homeschool demographics; this time noting the wide variety of teaching and learning arrangements homeschool parents were adopting. These ranged from the formal lesson plans and pre-packaged curricula purchased from correspondence schools to the child-paced practices adopted by the heirs to John Holt's "unschooling" philosophy. She also reported on the rise of parent-organized co-operatives and the emergence of tutoring and "part-time" schools offering services to this population. Lines estimated the size of the movement had grown to between 150,000 and 300,000 children.

Apart from articles published by NHERI, scholarly interest in homeschooling lagged throughout the 1990's with only a handful of articles appearing in peer-reviewed journals. By the late 1990's, homeschooling was legal in all fifty states (Gaither, 2009b) and Lines (2001), now using data available at the state level, concluded the homeschool population had topped 1,000,000 before the end of the decade. She reported

homeschooling as “one of the most significant social trends” of the last fifty years and continued to note the variation within the homeschool community. Lines also reported growing incidents of collaboration with local public and private schools (e.g., offering classes and access to extra-curricular activities) and alternatives to these springing up within the homeschool community itself. Beginning in 1999 the National Center for Educational Statistics (NCES) began including questions about homeschooling at five year intervals on the National Household Education Survey (NHES), and making these data available for analysis. The availability of data, plus the significant growth rate of the movement definitively identified by the NCES surveys, correlates with the marked increase in scholarly interest over the past decade.

In 2000, *The Peabody Journal of Education* became the first mainstream scholarly publication in the U.S. to devote an entire issue to home education (75, 1&2); articles focused on its historical contexts, current pedagogical practices, and theoretical implications. In 2003, the UK-based journal, *Evaluation and Research in Education* devoted a special issue to homeschooling, publishing eleven papers from seven countries. And in October 2009 *Theory and Research in Education* devoted a special issue to an analysis of public policy concerns surrounding homeschooling.

By 2007, NCES data suggested the number of homeschooled children in the U.S. had reached 1.5 million, representing nearly 3% of the school age population. Weak reporting requirements led many scholars to estimate the population closer to two million (Bielick, 2008; Ray, 2009), greater than the population of Los Angeles and Chicago school systems combined (Hill, 2000). Concurrent with the growth of homeschooling, has been the rise in public approval of homeschooling (Lines, 2001; Rose & Gallup,

2001) and its cultural normalization (Stevens, 2003).

The ascendancy has piqued vigorous scholastic interest in homeschooling as a grassroots social movement (Cooper & Sureau, 2007; Stevens 2001). However, interest in homeschooling as an educational reform has lagged and little methodologically rigorous statistical research exists (Stevens, 2001).

Challenges for Researchers

Persistent obstacles to researchers must qualify what is reportedly known about the homeschool phenomenon. First, it is difficult to access a representative sample of the population; and second, many homeschoolers refuse to participate in research for a number of reasons. Homeschooling in the U.S. is governed at the state level, and states were not prepared for the rapid growth of the population nor its members' political ardor. In less than two decades all fifty states legalized or relaxed their regulation of homeschooling; the variations of which make little sense unless one knows they were often cobbled out in a hurried fashion under political duress. While all states require some level of reporting, eighteen of these allow homeschoolers to associate with a private or religious school, whose rolls are not subject to state review. In addition, seven states do not require annual re-notification. While approximately half the states require some kind of evaluation of homeschooled students—typically annual achievement testing—no states report nor analyze these data. In the absence of a representative sampling frame, researchers must rely on convenience samples recruited through cooperative homeschool associations. The largest samples have been obtained with the help of HSLDA, whose members predominantly represent conservative Christian homeschoolers. Complicating recruitment is the antagonism that exists between other homeschool organizations and

HSLDA, which is viewed as over-reaching in speaking on behalf of the movement as a whole (Gaither, 2008; Stevens, 2001); thus HSLDA's endorsement undercuts participation from other quarters. The result is that many studies are over-represented by HSLDA's membership profile—white, conservative Christians.

Secondly, sample sizes and response rates are persistently low. Robert Kunzman, who maintains an online database of homeschool research, notes the 53% refusal rate on 2007 NCES survey (<http://www.indiana.edu/~homeeduc/index.html>). A meta-analysis by Knowles, et al. (1991) of data from four western states found overwhelmingly positive outcomes associated with homeschooling, but only averaged a 24.7% response rate. Likewise, Ray's (1997) survey of homeschooled adults was based upon a 28.8% response. Sample sizes have also often been very small (e.g., Belfield, 2004; Collum, 2005; Mayberry & Knowles, 1989). Movement insiders attribute the reluctance to participate to high profile cases of homeschooling parents being fined, jailed or harassed featured by HSLDA and other homeschool publications (Kunzman, 2008). Some homeschooling families continue to remain underground fearing the legal climate will again change or because they continue to disagree with state regulations (Isenberg, 2007; Lines, 2000).

Complicating matters is the unease that exists between the professional community and the homeschool movement. In 1996 the *APA Monitor* (Murray, 1996) reported on the growing “skepticism” and “concern” among psychologists over the detrimental effects homeschooling may have on children's normative psychological development. Klugewicz and Carraccio's (1999) study of pediatricians' ($N=598$) attitudes toward homeschooling found only 18% supported the choice. A majority (51%)

judged homeschooled children to be less mature than their peers and 70% predicted homeschooled children would perform at average or below average levels on standardized tests. The National Education Association (NEA) first passed a resolution opposing homeschooling (as well as, access to extra-curricular activities) in 1988. Resolution B-81(NEA, 2010) remains intact today. Widely reported and challenged by homeschool associations, these published biases have contributed to homeschool parents' reluctance to participate in academic studies (Burkard & O'Keefe, 2005; Collum, 2005; Kunzman, 2008).

Household Demographics

Largely because of the public policy issues associated with homeschooling, research has focused on three essential questions: What are the demographics of parents who choose to homeschool? Why do they choose to homeschool? And, what are the outcomes for their homeschooled children? Since the NCES data collection began, more is known about the demographics of homeschooling households and parental motivations. Analyses of the NCES data from 1999, 2003 and 2007 have reported these central tendencies:

1. Eighteen percent report total annual household incomes under \$25, 000; 44% of the households report incomes between \$25,000-49,000; 25% between 50,000-74,000 and 13% above 75,000. This distribution is not statistically different from the national averages (Princiotta & Bielick, 2006). It is worth noting, though, that the majority of homeschooling households have only one parent in the workforce (Ray, 2005).

2. Homeschooling families are predominately White, middle-class, two-parent households; but minority representation has been on the rise throughout the past decade. According to the last NCES data collection (2007) approximately 23% of the population is African-American or Hispanic (Gaither, 2009A).
3. Ninety-seven percent of homeschoolers are married (Princiotta & Bielick, 2006; Palenty et al., 2009; Ray, 2005).
4. Homeschoolers average three children per family; significantly larger than the general population. Sixty percent of homeschooled children live in households with three or more children; compared with 40% of public and privately schooled children (Princiotta & Bielick, 2006).
5. Sixty percent of homeschooling parents have attended or graduated from a college or university, compared with 30% of the general population (Princiotta & Bielick, 2006).
6. Homeschooling is more likely to occur in southern and western states than in the northeast (Princiotta & Bielick, 2006).
7. There is a relatively high quit rate among homeschoolers – only 63% continue after one year, though religiously motivated homeschoolers persist longer than parents with other reasons (Isenberg, 2007).
8. Most parents homeschool for three to five years. Fifteen percent of secular homeschoolers persist after six years compared with 48% of religious homeschoolers (Isenberg, 2007).

Student-Level Demographics

1. Seventy-five percent of homeschooled students are White, non-Hispanic; compared with 65% of the non-homeschooled population (Princiotta & Bielick, 2006).
2. One in five students are reported by parents as homeschooled part-time, defined by NCES as enrolled elsewhere 25 hours or less a week (Isenberg, 2007). This represents a significant trend within the movement first reported by Lines (2000). Since the legalization of homeschooling, public and private schools have been extending services to homeschool families, partially to recapture some of the funding lost by their exit from formal schooling. New homeschoolers, less philosophically opposed to public education, report using homeschooling for a variety of more pragmatic reasons; including convenience (Gaither, 2009b).
3. Members of the “creative class;” including child actors, musical prodigies or rising elite athletes, have turned to homeschooling for the flexibility it affords (Gaither, 2009a).
4. One in four children who are homeschooled reportedly has special needs; which can range from food allergies to profound behavioral or learning challenges (Eisenberg, 2007;Princiotta & Bielick, 2006:).
5. There is no difference in homeschooling rates on the bases of gender, nor a significant difference between public schooled students and homeschooled students on the basis of grade level (Princiotta & Bielick, 2006).

Motivations

Tapping parental motivation for homeschooling has yielded a complex picture. Van Galen and other early researchers (Mayberry, 1988; Stevens, 2001;) adopted a dichotomous model: Parents held either religious reasons or pedagogical reasons for homeschooling. Recent research suggests the movement is diversifying and more nuanced data show past dichotomies may not fully explain the complexity of the homeschool movement within each of its earlier extremes (Gaither, 2009b, Rothermel, 2003; Fields-Smith & Williams, 2009). As early as 1995, Lines (2000) noted neither of the motivations purportedly held by progressives or Christian fundamentalists topped the list of motives in a state-level analysis of homeschooling in Florida; rather, dissatisfaction with the public school environment did. Parents cited safety, drugs and adverse peer pressure as their main concerns. Later researchers have challenged the underlying assumptions of a dichotomous approach (Nemer, 2002; Gaither, 2008) (i.e., parents may hold a mix of motives for their schooling choices.)

In the first wave of data collection by the NCES (1999), parents were asked to provide their most important reason for homeschooling; from this a list of choices was generated for subsequent surveys. The NCES survey now allows parents to select their most important reason for homeschooling, as well as all reasons that apply to them. From this process, six categories of motivation have emerged: (a) concern about the school environment, (b) to provide religious or moral instruction, (c) dissatisfaction with academic instruction at other schools, (d) child has physical or mental health issues; (e) child has other special needs, and (f) other reasons. More than 85% of parents in the 2003 data collection said concerns about the school environment applied to them; 72%

said to provide religious or moral instruction applied; and 68% selected dissatisfaction with academic instruction at other schools. Interestingly, none of these motivations suggests parents have clear, pedagogical intentions in mind that prompt them to homeschool; and Van Galen's original Pedagogues appear to be missing or obscured in the current motivational picture.

The Ideologues (or religiously-motivated) parents of Van Galen's original dichotomy also appear to be in decline. While a desire to provide religious and moral instruction continues to account for $\geq 30\%$ of parents' primary motivation for homeschooling in the U.S. (Princiotta & Bielick, 2006; Palenty et al., 2009); more than 70% list non-religious reasons as their foremost motivation. As reported incidents of school violence and bullying have increased; concerns about the school environment as a primary motive for homeschooling have consistently equaled religious and moral motivations. The list of other factors continues to grow (e.g., low academic standards at school, a child's special needs, conflicting family demands). A similar distribution of motivations has been found in other samples (e.g., Collum, 2005; $N = 235$, 71% response rate). This growing diversity has led some scholars to suggest a new breed of homeschooler who is less ideologically or politically motivated is on the rise (Coleman, 2010, Gaither, 2009a;). Coleman (2010) added the "pragmatic" homeschooler to Van Galen's original dichotomy after finding that the collaboration and resources facilitated by the Internet account for the rise of a group of parents who offer an array of practical reasons for undertaking a child's schooling.

Fields-Smith and Williams (2009) called for the addition of the "ethnological" homeschooler to represent the motivations of minority groups who choose

homeschooling to counter prevailing socio-cultural biases. Venus L. Taylor (2005), a Harvard-educated African American homeschooling parent, cites the persistent achievement gap between Black and White students and teachers' low expectations of minority students; in particular boys, as her primary reason for homeschooling. Jennifer James, cofounder of the National African-American Homeschoolers Alliance, reported similar reasons given by her members in a 2003 interview (Gaither, 2009a). Fields-Smith and Williams (2009) interviewed 24 Black homeschooling families over two years. Their ethnological study found 80% attributed inequities and prejudices within the school system as a trigger point for homeschooling; and most considered the school learning environments to be detrimental for African American students. Families in this sample also highlighted African American males as particularly at risk for teachers' low expectations and identified this socio-cultural issue as a primary factor behind their decision. One-third of the families in this sample had a child referred for special education services and the majority believed racial prejudices had informed teacher assessments. Others believed access to gifted services were withheld because of low expectations for minority students. In contrast with scholars who have cast homeschooling as an extreme example of "white flight" from forced integration (Apple, 2001), the Black families in Fields-Smith and Williams' sample believed they had greater opportunity for their children to experience an integrated learning environment through their local homeschool groups. Likewise, Collum (2005) found the minority parents ($n = 17\%$) in his large sample ($N = 235$) of homeschool parents were significantly more likely to attribute their motivation for homeschooling to dissatisfaction with the public school system than White parents.

Additionally, recent researchers have challenged the working definitions provided by Van Galen (1991). Winstanley (2009) argued that creative-class parents may be Pedagogues, but they are often more interested in promoting academic rigor than cultivating an unschooling (i.e., child-led) learning environment; Fields-Smith and Williams (2009) found that a majority of the African American parents in their study were motivated by religious beliefs, but as a source of empowerment to undertake homeschooling not as a response to secularized curricula. Missing from the data is the notion that parents hold strong philosophical reasons for homeschooling or have a cohesive educational view when they begin homeschooling; though some scholars (Neuman, 2004 ;Rothermel, 2003; Van Galen, 2001) suggest homeschool parents' reasons and practices appear to change over time, often becoming more radicalized in their educational philosophy and approach.

Recent scholars have considered the psychological processes involved in parents' decision to homeschool. Building upon parental involvement research, Green and Hoover-Dempsey (2007) examined the degree to which psychological motivators (e.g., active parental role construction, strong efficacy for helping a child learn and parental beliefs about their children's learning) explained parents' decision. Their sample of homeschool parents ($N = 136$; 54% response rate) from a southeastern state generally fit the demographic profile reported in the NCES data. Their findings were compared with those found in Walker's (2005) sample of public school parents ($N = 358$). The group of homeschool parents held significantly stronger beliefs about their responsibility to be involved in their child's education, their self-efficacy for helping their child learn and the availability of time and resources to support their child's learning than the sample of

public school parents. The homeschool parents also reported, but less strongly, negative beliefs about the school's ability to teach character development, meet children's individual needs and use sound teaching practices. Green and Hoover-Dempsey also examined within-group differences among their homeschool sample. They found two types of homeschoolers in their sample which reflect the growing hybridization within homeschooling. The first group of parents (approximately 68%) felt strongly it was their right and responsibility to oversee their child's education and held strong efficacious beliefs about their ability to meet their child's educational needs; the second group (approximately 12%) saw their child's needs best met in partnership with other agencies (e.g., umbrella schools, cyber schools). The former group expressed higher levels of dissatisfaction with the public school system's ability to meet their child's needs. Overall, the sample of homeschool parents held significantly higher self-efficacy for meeting their child's educational needs in comparison with public school parents.

Given the reportedly high quit rate among homeschoolers, Wyatt (2008) writing as a participant observer of the movement for more than a decade and a sociologist, investigated the characteristics associated with persistence in homeschooling. While parents frequently attributed educational and religious goals as trigger points for homeschooling, Wyatt concluded that deepening and preserving familial relationships distinguishes those who persist; a motive not salient at the outset for most, but one that emerged "as a serendipity"(p.21) of the experience. Wyatt set this qualitative difference in contrast with a broader cultural shift in which parents and children increasingly inhabit very separate worlds. The homeschool parents who persist, Wyatt asserts, derive emotional and social satisfaction from homeschooling; those who don't, quit. He also

noted that most homeschooling parents, regardless of ideological views, reported dissatisfaction with the public school system. However, as challenges in homeschooling arose, parents' views moderated and increase confidence in their local school system preceded desisting to homeschool. Wyatt also reported on the pedagogical, philosophical and political diversity among homeschoolers other qualitative researchers have observed (Kutzmann, 2009; Stevens, 2001; Van Galen, 1988).

Outcomes

If gaining access to adequate sampling frames for homeschool parents is not confounded enough by inconsistent reporting methods, gathering data on the outcomes for homeschooled children is even more problematic. First, given the debate surrounding the social desirability and legality of homeschooling, parents are under enormous pressure to produce confirmatory results—and the vast majority of studies considering outcomes rely on reports made by parents. Second, many homeschool parents dismiss traditional measures of achievement and adjustment as counter to their goals. Some parents do not award grades nor administer standardized tests; few desire their children to fit into the current youth culture. Third, conditions under which measures might be taken (e.g., standardized testing) may vary widely and parents are often the ones who administer these exams. Finally, attributing outcomes to the treatment effect of homeschooling is confounded unless longitudinal data are gathered, compared with a control group and other factors; such as, SES are controlled for. Virtually no data have been collected which reflect these conditions.

Given these caveats, the following section reviews the best methodological research that has examined outcomes associated with homeschooled children.

Achievement

Measuring achievement among homeschooled students in a meaningful way has been hampered by lack of access to uniform data and the inability of researchers to control for other factors (such as SES) that may also explain results (Belfield, 2002). While several states require regular testing, none collect or analyze these scores. Because homeschooled students are exempt from No Child Left Behind (NCLB), in states where achievement testing is mandated, homeschooled students do not take the same tests as their public-educated peers; so comparisons at the state level are confounded. Homeschooled students' achievement test scores, where available, may be compared with national norms; though, the scores in most of the data sets are only those released by parents. Given the selective-reporting; as well as, differences in socio-economic status reported between the homeschool population and the general schooling population (homeschooling parents are better education and more White; though economically similar), these scores may not reflect meaningful differences that can be attributed to homeschooling.

In the early years of homeschooling, Washington State did attempt a longitudinal investigation of their homeschool population (the project has since been abandoned). Achievement test scores of registered homeschooled students across 1986-1988 reflected norms around the 66th percentile (Wartes, 1989). The state of Oregon did not release data, but acknowledged that more than 72% of home-educated students scored at or above the 51st percentile on their standardized achievement tests in 1986 and 1988 (Ray & Wartes, 1991). While in both of these studies, testing services, not parents, made test scores available for analysis, not all testing services released scores in Wartes, 1989. And even

though testing was legally required in Oregon annually in the late 80's, less than 50% of the registered homeschooled parents actually submitted scores.

Rudner's (1998) study included the largest national sample to date; however, parents opted in and the study was sponsored by HSLDA. Rudner, then director of the ERIC Clearinghouse on Assessment and Evaluation, analyzed demographic data and achievement scores for 20,760 (out of a possible 39,670; 52% response rate) K-12 homeschooled students whose parents had contracted with Bob Jones University Testing and Evaluation Services. Critics of the study (see Welner & Welner, 1999) note that the controversial nature of Bob Jones University, (a southern university with a history of racial segregation and religious fundamentalism), precluded generalizing findings to the larger homeschool population. Nevertheless, the findings have been widely reported in the press as evidence of home schooling's success.

Major findings included the following:

- Homeschooled students on average performed between the 70% - 80% on all subtests.
- Twenty-five percent were enrolled in grades above their age level.
- Homeschooled children watch significantly less television weekly than their peers.
- Students who had been entirely homeschooled performed significantly better than those who had a mix of educational backgrounds.
- The achievement gap between public and homeschooled students' performance widened beginning in 5th grade.

- There were no significant differences in performance based on gender.
- There were significant differences based upon SES and parent educational attainment. Though students of parents with only high school diplomas or a GED still performed well above national averages.

Ray (2010) attempted to recreate the breadth of this study, plus address those methodological weaknesses criticized by scholars. To do so, Ray contracted the aid of 15 homeschool organizations which provide or promote testing services to homeschoolers at the national or regional levels. The lengths to which the researcher went to attempt to secure a representative sample of the population (repeated follow-up appeals to members and contact with organizational leaders) and the relatively small response rate he ultimately achieved (estimated between 11% and 25% at best) speaks to the movement's amorphous nature and resistance to being measured. At the least, it suggests researchers should consider tapping outcomes other than achievement test scores; perhaps examining those that are more meaningful to homeschooling parents. Additionally, despite the impressive final sample size ($N = 11,739$), the demographics depart from the NCES 2003 data in several significant ways: Ray's sample is significantly more White, more educated, more well off and more conservative and Christian than the NCES data suggest about the movement as a whole. Not surprisingly then, the norms reported are quite high (85%-89% on all subtests). Given that Ray does not control for SES, the achievement of the students in this sample cannot be attributed with confidence to homeschooling.

In 2001, ETS released a subset of homeschooled students' scores ($N = 6,033$) on the Scholastic Aptitude Test (SAT) for analysis. Given that students who take the SATs represent a selective sample of students, Belfield (2002) found the homeschooled

cohort's raw scores were 0.4 standard deviation above the public school scores and 0.15 SD below the private school scores. The homeschooled sample's scores on the verbal portion of the test explained the differences. Belfield suggested this reflects greater parental competence in this subject area. Two other studies also compared the SAT scores of incoming freshman among public, private and homeschooled students. In both Clemente's (2006) and Chatmont's (2006) incoming homeschooled students had the highest raw scores among the three groups, but none of these were significantly different statistically. Neither of these studies considered how the universities' enrollment policies may have affected the demographics of each type of student. An analysis of the 2000 ACT scores reported in Jones and Gloeckner (2004a) showed homeschooled students averaged 22.8 on the ACT composite score in comparison to the 21 point composite score for all students.

Gender and Race

To date, no scholarly investigation of gender differences has been reported in the literature. However, Rudner (1999) found no significant differences between genders on achievement scores. Gaither (2008) and Stevens (2001) observed less differentiation between the genders in the home schools they investigated than in conventional settings in their qualitative studies. Kunzman (2009) who studied six conservative Christian home schools in depth noted different educational goals for daughters than sons among the six fundamentalist families he studied.

In 1997 and 2005, Ray prepared meta-analyses of all research available on homeschool achievement. (The studies included in the metal-analyses did not control for SES and data came from convenience samples.) Among his reported findings were no

significantly statistical differences between minority and White homeschool students. Blacks scored on average at the 87% in reading and 77% in math (in comparison with 23% for Black children in public schools). Reporting on this phenomenon in *Blacks in Higher Education* (2000), the editors noted the degree to which homeschooled Black children were outperforming public-educated White children (by nearly 20%). The editors argued that opportunities; such as those available to families who can afford to exercise the option to homeschool, point to a pathway for closing the achievement gap.

College Transition and Adjustment

While little empirical research exists regarding college transition and adjustment among homeschooled students; it can be inferred that they have done well. This is seen in the dramatic reversal in admissions policies colleges and universities have adopted in less than a decade (hsllda.org); and the active recruitment by college admissions offices at homeschool gatherings and through their publications. It also appears that while homeschooling parents have jettisoned traditional modes of a K-12 education, most still value college entrance as a desirable outcome for their children. In Ray's (2004) study of homeschooled adults ($N = 7,306$), again recruited through HSLDA, he found 74% (compared to 46% of the general population) had completed some level of college work (most were enrolled in an institution of higher learning at the time of the survey).

The *Journal of College Admission* devoted an entire issue in 2004 to updating its members about this special population and took an editorial stance that advocated the benefits of recruiting these "capable" students. Though the outlines of his study are vague, Gary Mason (2004), an experienced admissions director at Ball State University, reported their homeschooled applicants had above average SAT and ACT scores (1210

and 29, respectively) and higher GPAs (3.47 vs. 2.91). Through semi-structured interviews, he concluded the homeschooled students on campus were doing well socially. Jones and Gloeckner (2004a) compared freshman year outcomes between 55 degree-seeking homeschooled students and a randomly drawn sample ($n = 53$) of conventionally-schooled students enrolled at Colorado public colleges and universities between 1998 and 2000. Data were obtained from the Colorado Commission on Higher Education. Though none of the variables examined reached statistical significance, homeschooled graduates earned more credits, had higher GPAs and retention rates their freshman year than the conventionally-schooled graduates. The homeschooled sample also had statistically higher (22.8 versus 21.3) ACT composite scores. Jones and Gloeckner, who are college admissions officers, concluded homeschooled students are as college-ready as their conventionally-schooled peers.

Social and Psychological Adjustment

While the debate over homeschool students' achievement has subsided, the degree to which homeschooling promotes social adjustment and healthy psychological development remains the epicenter of the controversy surrounding the social desirability of the phenomenon. Scholarly understanding along these dimensions remains murky at best; presumptive at worse. Critics (Apple, 2001; Lubinski, 2000; Murray, 1996; Reich, 2005) have theorized (though none have empirically tested) that homeschool children will not learn how to get along with others, consider opposing views, establish their identity apart from their parents nor be equipped to function adaptively in the "real world." Michael Apple, a critical theorist, has argued that parents (especially those who are religiously motivated) may control their children in dangerous ways. Implicit in this

criticism is the assumption that schools play an indispensable role in the socialization process (Lubienski, 2000; Medlin, 2000; Reich, 2001).

Homeschool advocates, conversely, challenge the assumption that schools make a necessary contribution to a child's socialization and psychological development. Medlin (2000) reported that homeschool parents contend that it is the school environment "that stifles children's individuality and harms their self-esteem" (p. 107). Other advocates assert that the nature of the school environment is adverse to healthy moral and social development (Gatto, 1991; Holt, 1982).

While few empirical studies have attempted to measure social adjustment, several have noted homeschooled students' opportunity for socializing experiences by counting contact with others outside the family and engagement in extra-curricular activities (Ray, 2004). In virtually all of these studies, homeschool families reported a high degree of involvement with the community-at-large through church activities, 4-H, library services, volunteer efforts, etc. (Delahooke, 1986; Taylor, 1986; Wartes, 1987). Medlin (1998) reported finding a more diverse range of social contacts among homeschooled students than among public and private schooled children. And Shyers (1992), in a controlled experiment involving 70 homeschooled and 70 conventionally-schooled eight-to-ten year olds, found no significant differences between groups on measures of self-concept and assertiveness. However, in videotaped analyses of the two types of children playing together, trained observers who did not know the children's schooling status rated conventionally-schooled children eight times higher overall on problem behavior; such as, aggression and competitiveness, than homeschooled children on the Direct

Observation Form of the Child Behavior Checklist (Achenback & Edelbrock, 1983; 97 items).

Home Schools as Learning Environments

Many scholars have noted the opportunity for optimal learning a homeschool (in contrast to a conventional school) may provide (Knowles, 1988; Ray, 2002; Van Galen, 1988), yet few studies have investigated the opportunities, contingences, and constraints parents may face in reality. Early researchers who classified homeschoolers along ideological lines (e.g., religious vs. nonreligious) theorized, but did not systematically examine, the pedagogy that might follow (Mayberry, 1988; Stevens, 2001; Van Galen, 1991). Of the studies that investigated practices (Van Galen, 1988), none appeared to systematically conceptualize these. Van Galen found that Ideologues in her study emphasized character development more than academics and they were likely to adopt the structure and practices of a conventional setting, going so far as to set up a schoolroom and mounting a chalkboard. Parents assumed the role of “monitors” (p. 58) as their children’s progressed through a pre-packaged curriculum designed for traditional Christian school. Some went so far as to enroll their children in a correspondence school which provided direction and ongoing assessment of the child’s work. Van Galen reported these parents expressed a great deal of “uncertainty” about what their children ought to be doing and viewed teaching as “a somewhat mysterious and unfamiliar enterprise”(p.59). Parents' evaluation of the success of their home school centered on whether or not their children were “ahead” of a traditional school timeline (p.59). Van Galen found parents relaxed their commitment to these structures and standards over time, but she argues that even as they individualized the pace of their program to match a

child's readiness, she found little autonomy in these types of programs.

Ray has reported on the practices of home schooling parents in several of his studies (see Ray, 2005 for a review). Beginning in 1988, he reported 'the learning program is flexible and highly individualized, involving both homemade and purchased curriculum materials;' 'children are formally schooled an average of 3-4 hours a day and often spend extra time in individualized learning endeavors' (pp.16-17). However, Ray has reported other practices (e.g., limiting television and outside influences, required church attendance, punishment and reward systems) some scholars have denoted as controlling and rooted in behavior modification theory (Cai et al., 2002; Kunzman, 2009). Wartes (1988a) noted finding a range of highly structured to unstructured home schools in his sample. Qualitative researchers have noted the actual practices of homeschooling families vary widely (Stevens, 2001; Van Galen, 1991; Wyatt, 2008). Recent scholars note home schools are trending toward accommodation, adaptation and hybridization (Gaither, 2009A), while 43% report using some form of distance learning (Princiotta, 2003).

Karen Rogers Holinga (1999), in one of the few longitudinal studies of homeschoolers, found parents progressed along a continuum from structured to less structure over time. Homeschool researcher, Milton Gaither (2009a), reporting on the "new homeschooler" found a continuum of pedagogy from "unschooling" to "formal schooling" using traditional curricula from three main fundamentalist satellite schools (i.e., Bob Jones, Abeka and CLASS). Gaither also noted the use of cooperatives which become school-like as they mature. Other researchers have documented the use of tutors, field trips and co-ops. Fields-Smith and Williams reported 80% of their African-

American sample created an afro-centric focus in their curriculum. Kunzman's ethnographic investigation of six conservative Christian homeschool families noted marked differences in pedagogy among them. Van Galen's (1988) and Stevens' (2001) qualitative investigations of the dichotomous nature of the homeschool population; nevertheless, reported finding varied practices within both groups. As many scholars have remarked, the actual practices of families that educate their children at home vary widely (Stevens, 2001; Van Galen, 1991; Wyatt, 2008). Paul Hill (2000) noted homeschoolers are "bartering" for services with each other; others are forming sports leagues and increasing numbers are accepting services from school districts.

While this anecdotal evidence suggests many teaching parents are using the freedom of a homeschool setting to innovate and adapt the educational context, why they do so and what underlying psychological processes inform these choices is poorly understood. Even more significant, how these practices may foster or undermine the development of achievement motivation and other desired outcomes in their children is an open question. In order to systematically study the effects of homeschooling, terms must be operationalized and a theoretical framework for examining this phenomenon identified. One approach is to examine the learning environments homeschool parents have created along the dimensions scholarly research suggests promote achievement motivation, and social and psychological adjustment in conventional educational settings.

Self-determination theory is one such promising framework, primarily because SDT contends that its central constructs: the need for autonomy, the need for competence and the need for relatedness are inherent and universal (Deci & Ryan, 2000). The satisfaction of these needs provides the nutrient source for the development of

autonomous motivation—the optimal form of achievement motivation associated with highly desirous outcomes; including social and psychological well-being (Deci & Ryan, 2000).

Further, SDT has not only been broadly applied to educational settings, it has also been applied to many life domains; including work, sports, relationships, religion and health (Deci & Ryan, 2000). Current SDT research is focused on extending the theory's utility across cultures and contexts (Deci & Ryan, 2008). Applying SDT's theoretical lens to an examination of home schools provided an opportunity to extend this research to an important emerging educational and sociological phenomenon, while providing an interpretative framework for describing within group differences among homeschooling parents.

Review of Self-Determination Theory Research

While early research into the effects of schooling focused on measures of summative assessments (Meece & Schaefer, 2010), more recent scholarly interest has turned to other constructs associated with optimal human functioning; including a child's social and emotional adjustment, identity development (Meece & Schaefer, 2010); and motivational orientation (Deci & Ryan, 2000; Maehr & Midgley, 1996). A central concern of research investigating the effects of learning environments has been to identify those conditions that best support the development of academic motivation (e.g., Eccles & Roeser, 2009); i.e., goal-directed engagement and interest in school-based learning. While significant factors exist at the person-level (e.g., student self-efficacy, goal orientation, interest; self-regulation); a body of empirical research has identified

environmental conditions and instructional practices that influence these individual characteristics in a supportive or detrimental way. Significant factors have included: a teacher's own self-efficacy (Roeser & Eccles, 2000); teacher's achievement expectations of students (e.g., Brophy, 2004); emotional support (Deci & Ryan, 2002); autonomy support (Deci & Ryan, 2002; Grolnick, Gurland, Jacob, & Decourcey, 2002); mastery-oriented goal focus (Maehr & Midgley, 1996) and person-environment fit calibrated with a student's interests, skill level and psychological needs (e.g., Eccles & Roeser, 2009; Hidi & Harackiewicz, 2000).

In many ways, more is understood about conditions that may thwart or undermine a student's achievement motivation in a conventional setting. Teacher's low self-efficacy for teaching and low expectations for students have been linked to lower achievement and motivation (Eccles & Roeser, 2009); these problems are more likely to present among teachers working with older students and minority populations (Wigfield, Eccles, Schiefele, Roeser, & DavidKean., 2006). Practices that have been found to lead to disengagement for many students include ability tracking, large class size, competitive environment, and ethnically underrepresented curricula (Eccles & Roeser, 2010; Stockard & Mayberry, 1992). More concerning is the trend for student interest, engagement and academic motivation to decrease over time; and significant differences in academic achievement, identification and engagement among White, Black and Hispanic students (Meece & Schaeffer, 2010; Planty et al., 2008) linking U.S. schools to some of the highest drop-out rates among industrialized nations (Planty et al., 2008). School violence and peer harassment in the form of bullying have also been widely reported in the literature as a recent cause of student disengagement and maladaptive outcomes related to

schooling experiences (DeVoe, et al., 2003; Nansel et al., 2001; Olweus, 1993). Parents have attributed many of these issues as trigger points for their decision to homeschool (Fields-Smith & Williams, 2009; Isenberg, 2007; Planty et al., 2009; Wyatt, 2008).

Self-Determination Theory and Achievement Motivation

Self-determination theory contends that need satisfaction provides the nutritive source for optimal human development across contexts, including a child's schooling years. Further, SDT posits that there are clear social-contextual factors that thwart or hinder this fundamental process (Ryan & Deci, 2002). The extent to which needs are supported predicts the development of autonomous motivation—the most desired state in SDT's constellation of positive developmental outcomes. Autonomous motivation is action generated and maintained out of one's inherent interest in a task or self-endorsed values (Ryan & Deci, 2002).

While other prevailing theories (e.g., self-efficacy, expectancy-value) correlate achievement with the quantity of motivation, SDT posits it is the *quality* that matters (Ryan & Deci, 2000; Vansteenkiste et al., 2006). An impressive number of experimental and correlational studies have linked autonomous motivation (i.e., that which is internally regulated) to better academic and developmental outcomes; e.g., achievement (Grolnick et al., 1991), creativity (Koestner et al., 1984), preference for challenge, deeper conceptual understanding (Benware & Deci, 1984), well-being, vitality (Grolnick & Ryan, 1987; Reeve, 2002; Vansteenkiste et al., 2009) than motivation that is maintained through extrinsic means; e.g., pressure, systems of rewards and punishment, grades, comparative evaluation, competitive environment (Reeve, 2002).

The proximal antecedent to the development of autonomous motivation is the

satisfaction of a student's inherent psychological need for autonomy, competence and relatedness. Teachers support a student's quest for need satisfaction by adopting an autonomy-supportive motivational style; those who embrace a more controlling approach undermine it (Reeve, 2002). In addition, structural influences such as district level pressure to reach testing benchmarks, may routinely interfere with a teacher's ability to maintain an autonomy-supportive orientation. Some empirical investigations suggest few autonomously-motivated students may actually exist in a conventional classroom (Ratelle, Guay, Vallerand, Larose & Senecal, 2007; Vansteenkiste et al., 2009).

Teachers support student autonomy through the opportunities for choice (Katz & Assor, 2007), the use of non-controlling language and the provision of a meaningful rationale for activities (Reeve & Jang, 2006). Students' autonomous motivation is strengthened by positive performance feedback and an enhanced sense of competency mediated by student success (Ryan & Deci, 2000). Conversely, practices (e.g., rewards and punishment) and feedback perceived as intended to control a student's behavior can undermine autonomous motivation and lead to extrinsically motivated effort or amotivation (Deci, Spiegel, Ryan, Koestner, & Kauffman, 1982).

Competence is a sense of efficacy for the tasks at hand. Self-determination theory research suggests this need is supported when activities are optimally challenging and opportunities to exercise one's capacities are afforded (Ryan & Deci, 2002). Structure, in the form of clear expectations, limit setting and availability of support, has been shown to provide greater opportunity for competence (Sierens, Vansteenkiste, Goossens, et al. 2009). Negative performance feedback or structure that is intended to control or pressure thwarts the need for competence and undermines autonomous motivation (e.g., Deci &

Cascio, 1972; Vallerand & Reid, 1984).

In addition, the classroom goal orientation can promote or undercut a student's need for competence. Classrooms where teachers focus on learning, understanding and developing mastery of the material have been shown to promote students' academic motivation (Maehr & Midgley, 1996); preference for challenge; effective strategy use (Ames & Archer, 1988); and psychological well-being (Kaplan & Maehr, 1999). Conversely, in learning environments where performance goals are emphasized (e.g., evaluative tasks focused on demonstrating competence and peer-comparisons), the development of achievement motivation and psychological well-being can be compromised (Ames & Archer, 1988; Kaplan & Maehr, 1999).

Relatedness, the sense of connection and belonging to others in the learning environment, is regarded as a more distal factor (Deci & Ryan, 2000); but considered theoretically important for many activities, including academic engagement. Koestner, Ryan, Biernieri, and Holt (1984) found teachers' expression of empathy helped students maintain intrinsic motivation. Frodi, Bridges, and Grolnick (1985) found higher levels of attachment between child and mother predicted great exploration of the environment.

SDT specifically argues that ideal learning environments should support a student's intrinsic motivation for learning, which SDT theorists claim is "inherent" (Niemiec & Ryan, 2009). Niemiec and Ryan (2009) call this "natural tendency" to learn "the greatest resource educators can tap" (p.134). However, external controls (e.g., grades, deadlines, excessive monitoring) common to the modern classroom undermine intrinsic motivation and psychological well-being. SDT posits that a student's need for autonomy, competence and relatedness must be met in order to maintain optimal adaptive

motivation within a learning context. Conversely, when needs are thwarted in the learning environment, maladaptive outcomes are predicted; i.e., reduced interest, reduced intrinsic motivation, reduced creativity (Koestner et al., 1984).

Self Determination Theory and Parenting

SDT has also been used to examine how parenting styles may contribute to the development of achievement motivation in children. Grolnik and colleagues (2002) have posited that a set of distinct parenting characteristics work together to promote a student's sense of competence and self-regulation; which in turn are associated with higher levels of motivation and adjustment. These three dimensions include autonomy-support, structure and involvement. Autonomy-support is measured by the degree to which parents use techniques which encourage problem-solving, choice and participation in decision-making versus those that dictate outcomes, use punitive discipline and controlling rewards. Structure is measured through the provision of clear and consistent guidelines and expectations for a child's behavior and involvement is conceptualized as the degree to which a parent is knowledgeable about and takes an active role in a child's life. Autonomy-support has consistently been found to be associated with student achievement and motivation (e.g., Avery & Ryan, 1988; Grolnick & Ryan, 1989,) as has parental involvement (Avery & Ryan, 1988; Fan & Chen, 2001). The role of structure remains less understood, perhaps because how it is operationalized can vary significantly across studies, but is still considered theoretically important (Connell & Wellborn, 1991; Eccles, 1993; Skinner, 1990).

Self-Determination Theory and Homeschooling

While homeschooling has not been a phenomenon of interest in educational psychology nor self-determination research in particular, one notable exception is Cai et al. (2002). In their study, the authors compared the motivational styles of a sample of religiously-motivated homeschool teachers with experienced and preservice teachers using the unaltered Problems in School (PIS) questionnaire. While the samples of professionally-trained teachers did not significantly differ statistically in their motivational orientation, the home school teachers ($n = 71$) reported a significantly more controlling motivational style ($M = 2.44$, $SD = 2.81$) than all other groups—teachers ($n = 76$) ($M = 4.67$, $SD = 2.82$), teachers taking classes ($n = 40$) ($M = 4.97$, $SD = 2.48$) and preservice teachers ($n = 36$) ($M = 4.64$, $SD = 3.44$). The home school parents were more likely to be politically conservative and attend church more frequently than the teachers. Cai et al. argued that commitment to a preset agenda; i.e., “how children should think, feel, and behave” (p. 378) best explains a controlling teaching style (see Deci et al., 1982).

In contrast with this finding, the qualitative literature suggests that many homeschool parents highly value an autonomy-supportive learning environment (Wyatt, 2008), the question remains open, however, as to what strategies they might implement to support this. Stevens (2001) observed that despite the polarized segments he found among homeschoolers he studied in the late 1990’s (“Christian” and “inclusive”), parents in both streams told him “time and again their children’s self-development was worthy of virtually any sacrifice” (p. 7). In light of the current study it provides intriguing background to quote Stevens at length here:

Careers were suspended, incomes cut, houses left uncleaned or unfixed, adult social lives curtailed dramatically, and sometimes, marriages strained, all in the interest of giving more to the kids (p. 8).

Beatrice Wood-Cooper, a biologist-turned-homeschool mom, in an interview with *Ebony* (2005) said “It’s my job to support his creativity. I get to understand and connect with him on a deeper level (p. 104).” Evidence of parents’ efforts to be responsive to their children’s needs is reported in Fields-Smith and Dempsey’s (2009) qualitative study as well. These authors reported on discussions within focus groups centered on parents’ efforts to modify the curriculum to their child’s learning style and experimentation with different curricula to find a good fit.

Homeschooling seemingly affords parents a prime opportunity to implement practices which support autonomous motivation. They can provide a psychologically responsive learning environment calibrated to a child’s developmental needs and marshal the resources necessary to sustain that, presumably with greater autonomy than classroom teachers. However, unique constraints which may undermine autonomous motivation are also inherent in some home schools. These may include the challenges of working with several children at multiple levels and across domains, limited income and resources, lack of access to services or public school opportunities, external controls from state regulating bodies, lack of training in effective teaching techniques, or lack of knowledge about the subject matter. Socio-emotional factors may further affect a parent’s teaching style as well. Parents may be ego-involved, feel pressure to prove homeschooling works

to relatives, spouses or significant others, have low self-efficacy for teaching or be experiencing a lack of need-support themselves.

This study sought to clarify this pedagogical picture by examining the opportunities and constraints homeschooling affords parents to support the development and maintenance of autonomous motivation in their children. Further, it aimed to describe the teaching strategies and socio-contextual conditions associated with the quality of achievement motivation they reported for their children. Self-determination theory, in its broad consideration of the social environment's impact on motivation, affect, behavior and well-being, provided a comprehensive paradigm for evaluating this; as well as, for detecting meaningful within group differences along these dimensions. To date, SDT has been used to explain student motivation in traditional settings where external controls heavily influence the learning environment. This study represented a unique opportunity to study the main tenets of SDT in a natural learning environment where, theoretically, external controls may not necessarily interfere with need support (Cai et al., 2002). It contributed to SDT research not only by extending the utility of the theory to an important, emerging learning context; but it also provided preliminary evidence of the teaching practices parents have adopted which are associated with higher levels of autonomous motivation in their children. Given that more is known about conditions that undermine student motivation in a conventional setting than those that support it, this study contributed evidence to the theoretically assumed conditions which foster student motivation and academic engagement.

I turn now to a discussion of the methods used for this study.

CHAPTER 3

METHODS

This study examined types of home schools along their social-contextual motivational characteristics and identified meaningful, within group differences. These differences included types of educational environments, their potential to support the development of adaptive motivation and psychological well-being in homeschooled children, as well as, the instructional practices and family characteristics associated with each.

Using self-determination theory (SDT) as a lens, the study used cluster analysis to identify the types of home schools along the dimensions of support for student autonomy, competence and relatedness; the three inherent human needs SDT postulates as necessary for the development of optimal motivation for learning. The cluster solution was then validated by examining differences among groups on external variables: parent's basic need satisfaction, efficacy for homeschooling and the child of interest's academic engagement. Factors at the family, teaching-parent and child levels associated with the types of home schools were then identified through post-hoc analyses. The data came from self-reported scores on Likert-like scales and demographic information provided by participants. Prior to the main study, the measures were piloted and revised in order to establish their reliability and validity with a homeschool sample. Responses for the pilot and the main study were collected online in one wave over the course of several weeks using Survey Monkey Pro. These were then downloaded directly into SPSS for analyses.

The research questions for this study were as follows:

1. What naturally-occurring types of home schools may exist along the social-contextual dimensions of support for autonomy, competence and relatedness—three inherent needs self-determination theory posits as necessary for the development of autonomous motivation?
2. What teaching strategies characterize the types of home schools found in answering the first research question?
3. What family-level, parent-level and student-level factors are associated with the types of home schools found in answering the first research question?

Pilot Studies

In order to extend self-determination research to a home school context, the measures used in the main study first needed to be established as reliable and valid for use with this population. To accomplish this, 50 homeschooling parents from two nonsectarian South-Central PA co-ops—one offers classes for students 6th-12th, the other offers enrichment activities primarily for elementary-aged students—were recruited for the first pilot study. The response rate for this initial study was 63%. In order to achieve this response rate, I recruited participants on site. Following this, both co-op leaders prompted members three times at intervals via e-mail to consider participating in the study. Participants for the second pilot included 49 homeschooling parents from a Philadelphia-area co-op associated with a large suburban church. This co-op offers enrichment classes for elementary and high school students. Potential subjects were invited to participate via an e-mail from the group leader on two different occasions. The response rate for the second pilot was estimated to be > 30%; however, the exact number

of members who received an e-mail invitation is not known. The opportunity to enter a \$50 Amazon gift card sweepstakes was offered as a small incentive with each group. For both of these studies, parents were asked to not forward the link for the study to others outside their group so a reasonable response rate could be calculated.

Prior to piloting these measures, the full survey was reviewed by several homeschool experts for content and face validity and items were revised based upon their advice. All nine measures used in the main study were piloted with the first group and feedback from participants was also incorporated into the final version of the survey. Only the revised version of the Problems in School Questionnaire (PIS), which achieved unacceptable alpha levels in the first pilot, was administered to the second pilot group. Examples of the modifications and alphas for the pilot studies are reported in the descriptions of measures which follow.

Main Study

Participants

Participants for the main study (N = 664) were recruited from a national nonsectarian homeschool organization which offers high school classes online (predominantly Advanced Placement); 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. Unique links to the study were provided for each of these sources. The leader of the organization offering online classes worked closely with me to achieve a 51% response rate ($n = 215$). Potential subjects were recruited via e-mail twice, and offered the opportunity to enter a

\$100 Amazon gift card sweepstakes as a small incentive. Potential subjects on the e-mail distribution lists for the affinity groups were offered \$5 Amazon gift card as a small incentive for participation. One hundred and fifty-three ($n = 153$) participants came from these sources. Response rates for these groups could not be calculated because the exact number of members on the distribution lists was not provided, but rough estimates suggest between a 25%-30% response rate. As with the pilot study groups, group members were asked not to forward the link to the study to others outside the distribution list.

The blog used to recruit participants originally focused on homeschooling families in the U.S. military; it since has attracted a broader following of not just homeschoolers; but also, readers interested in a frugal, organic lifestyle. The blog owner estimated 5,000 of her readers are homeschooling in the U.S. An announcement promoting the study was posted on the homeschooling section of her blog; as well as, an offer of a \$5 Amazon gift card to participants. Within 72 hours, more than 300 people completed the study. Some of these, though, were deemed suspicious, and the qualitative responses were used to identify problematic cases (e.g. cases with nonsensical responses). A decision was made to close all surveys at this point, reasoning that enough cases had been collected for all analyses, (and the budgeted amount for Amazon gift cards was exhausted). Also, it was evident the link posted on the blog was beginning to be forwarded to others beyond the targeted audience. Two-hundred and ninety-six cases ($n = 296$) came from the blog readers. I continued to receive numerous requests from many homeschoolers and support group leaders who heard about the survey and desired to participate (but for the reasons stated above the survey was closed). This lends some

credence to the view that homeschoolers are willing to tell their stories if trust between the researching team and the homeschool community can be established (and a small incentive is provided).

Because of the length of time to complete the questionnaires (approximately 50 minutes), many participants did not complete the full survey. Those who did not complete at least the first measure (40 items) were eliminated. Additionally, 23 cases were identified that did not meet the operationalized definition of homeschooling (i.e., they reported the student of interest as enrolled more than 25 hrs. a week in a public or private school). Eliminating these 23 cases simultaneously eliminated two cases whose scores were identified as univariate outliers. The final sample size for the cluster analysis, which used listwise deletion, included 457 cases.

In submitting my proposal for this study, I noted one factor that might prove difficult to overcome in collecting a representative sample. Conservative, Christian homeschoolers tend to organize themselves into formal groups with recognized leadership (Stevens, 2003), thus accounting for their over-representation in most studies. Progressive and secular homeschoolers trend more toward loose, ad hoc affiliations. That was certainly the case here. Well organized groups with websites, board members, formal membership and a statement of faith were quick to say they would participate in the study and many offered to help me recruit other similar groups as well. On the other hand, I contacted numerous “unschooling” groups before I found some who were interested in promoting the study. Even when I found a person acting as an informal leader for the group, their communication network was not well established and few participants resulted. One unschooling group in the Midwest with an e-mail distribution list of an

estimated 80 names did participate; and these contacts were asked to send the link to other unschoolers they might know. Some of the participants from among the blog readers also self-identified as unschooling. But it is likely that this segment of the homeschool demographic is under-represented in the sample collected. Of the final sample used in the main study, 103 participants did not indicate their affinity group association, 93 came from the association providing high school level online classes, 113 came from the blog readers; and the remaining participants ($n = 148$) came from a mixture of five urban-based or unschooling networks.

What follows is a description of the sample ($N = 457$) used for the main study analyses:

Marital Status, Gender, Ethnicity and Age

Participants in this sample were characteristically married ($n = 430$; 94%), female ($n = 407$; 89%); and white ($n = 394$; 86%). Twenty-nine males ($n = 29$) completed the survey; 23 did not indicate their gender. Of those who indicated a minority status, 2 % were African-American ($n = 9$); 4% were Hispanic or Latino ($n = 20$), 4% were Asian ($n = 18$); 1% indicated American Indian or Alaska Native ($n = 5$) and >1% were Native Hawaiian or Pacific Islander ($n = 2$). Ten people did not report ethnicity. See Table 3.1. Most participants fell between 35-54 years of age ($n = 346$, 76%). See Table 3.2.

Socio-Economic Status

This sample of homeschool parents was significantly better educated and economically well off than the national averages and previously reported homeschool samples (NCES 2007; Princiotta & Bielick, 2006). For example, NCES 2007 data

showed 60% of homeschool parents reported some college or a college degree; whereas, in this sample 74% of the parents reported *at least* completing a college degree of which 27% held a graduate degree. See Table 3.2. Eighty-five ($n = 85$; 19%) participants stated they held or had held a teaching certificate at some point in the past. Thirty-four percent ($n = 156$, 34%) reported incomes above \$100,000; 22% ($n = 101$) reported household incomes of \$75,000–\$100,000; 18% ($n = 82$) reported an income of \$50,000–\$75,000 and 15% ($n = 67$) reported an income of \$25,000–\$50,000. See Table 3.2. The latest U.S. Census Bureau statistics (2010) show 20% of U.S. households report incomes above \$100,000, 12% report an income of \$75,000–\$100,000, 18% reported incomes of \$50,000–\$75,000 and 25% reported incomes of \$25,000–\$50,000. Previously reported data showed no statistical difference between homeschool families' household incomes and the national averages (Princiotta & Bielick, 2006).

Work, Religious Activity, Political Views

While 57% of the participants stated they did not work for pay ($n = 247$), 22% ($n = 99$) stated they worked more than 10 hours per week concurrent with homeschooling, while another 20% ($n = 91$) indicated they were working up to 10 hours per week while homeschooling. See Table 3.3. This characteristic may represent a growing trend among some segments of the homeschool population. Ray (2009) reported only 19.8% of homeschool mothers worked for pay with 85% of those representing part-time workers. Seventy percent (70%) of the sample reported attending religious activities weekly; only 10% said they never attend religious activities. See Table 3.3. Fifty-seven percent (57%) identified as politically conservative ($n = 263$), 11% identified as politically moderate ($n = 51$), 14% identified as liberal ($n = 63$), 8% identified as libertarian ($n = 37$), 4%

described themselves as apolitical ($n = 17$) and 6% did not report a political affiliation ($n = 28$). See Table 3.3.

No. of Children

As noted elsewhere (see Princiotta & Bielick, 2006), this sample also reported a significantly higher number of children per household than the national average. Fifty-eight percent ($n = 265$) of the sample reported three or more children. See Table 3.4. Of these, 17% had 5 or more children ($n = 79$). See Table 3.4. Nineteen percent ($n = 85$, 19%) stated they were homeschooling a child with special needs.

Commitment to Homeschooling, Experience and Degree of Monitoring

In contrast with a reportedly high quit rate among homeschoolers (Eisenberg, 2007), this sample represented the highly committed: Seventy-four percent (74%) of the participants ($n = 341$) stated they were “certain to homeschool next year,” additionally 5% ($n = 23$) stated they would not homeschool because their youngest child would graduate; of the remaining participants, 7% stated they “may homeschool”, less than 1% stated they “probably would not” and 1% stated they “would not homeschool”; 5% ($n = 22$) did not respond to this question. See Table 3.4. In addition to a strong commitment to continuing, the sample represented a very experienced group of parent-teachers. Fifty-four percent ($n = 249$) reported having homeschooled seven years or more; 12% ($n = 56$) had homeschooled 5-6 years, 13% ($n = 59$) had homeschooled 3-4 years, 10% ($n = 45$) had homeschooled 1-2 years, and 5% ($n = 23$) were in their first year of homeschooling. See Table 3.4.

A contentious issue between some segments of the homeschool population in the U.S. and authorities has been determining appropriate levels of oversight for home school programs. Advocacy groups; such as, Home School Legal Defense Association (HSLDA) have argued little to no oversight should be required. An analysis of data from the College Board by homeschool researcher Brian Ray (Ray & Eagleson, 2008) found no statistical differences on SAT scores for students from low-, moderate-, and high-regulation states. For this study, participants were asked to respond to the question, “To what degree does an outside governing body (such as a Department of Education, umbrella school, or local school district) provide oversight or require reporting of your homeschooling?” The degree of monitoring was measured as a continuous variable on a 5 point Likert-like scale (5 = *closely monitored*, 3 = *some monitoring*, 1 = *no monitoring*). Generally speaking, the sample reported some to little monitoring from authorities of their program; 36% ($n = 164$) of the respondents selected “no monitoring” which positively skewed the distribution ($M = 2.25$; $SD = 1.2$).

Motivations for Homeschooling

Participants were asked to provide a short response to the question “Please list your initial reasons for deciding to homeschool. Was there a particular event or experience that contributed to your decision to homeschool?” Ten main themes emerged from a content analysis of the data. Seven of these aligned with the seven categories constructed from the NCES 2003 and 2007 data set, with three additional categories emerging. The NCES motivations included: 1) Concern about the school environment, 2) A desire to provide religious or moral instruction, 3) A dissatisfaction with academic instruction at other schools, 4) A desire to take a nontraditional approach to child’s

education, 5) Child has special needs, 6) Child has physical or mental health problem, 7) Other. A nontraditional approach to a child's education was best described in this data set as a desire to provide individualized instruction in response to a child's interests and concurrent needs. I labeled this "A desire to provide a child-centered education." The three additional motivations included 8) pragmatic decision based on family's constraints (e.g., parent's occupation required a lot of travel, care for another family member with health issues, living remotely); 9) a desire to promote family closeness; and 10) influenced by other homeschoolers. This final category included those who were attracted to homeschooling through observing other homeschool families or talking with someone who promoted the benefits of homeschooling. Overall, "a desire to provide a child-centered education" emerged as the predominant motivation ($n = 169, 35\%$), followed by "concern with the school environment" ($n = 128, 28\%$), "dissatisfaction with academic instruction at other schools" ($n = 105, 23\%$) and "a desire to provide religious or moral instruction" ($n = 95, 21\%$). See Table 3.5.

Table 3.1
Percentages of marital status, gender and race/ethnicity

| Category | <i>n</i> | Percentage of sample |
|----------------------------------|----------|----------------------|
| Marital Status | | |
| Married | 430 | 94 |
| Single | 1 | <1% |
| Divorced | 3 | <1% |
| Cohabiting | 2 | <1% |
| Missing | 23 | 5 |
| Gender | | |
| Female | 407 | 89 |
| Male | 29 | 6 |
| Missing | 23 | 5 |
| Race/Ethnicity | | |
| White | 394 | 86 |
| African American | 9 | 2 |
| Hispanic/Latino | 20 | 4 |
| Asian | 18 | 4 |
| Native American/Alaskan Native | 5 | 1 |
| Native Hawaiian/Pacific Islander | 2 | <1% |

Table 3.2
Percentages of age, household income, and educational attainment

| Category | <i>n</i> | Percentage of sample |
|-------------------------------|----------|----------------------|
| Age | | |
| 24-34 yrs. old | 65 | 14 |
| 35-44 yrs. old | 178 | 39 |
| 45-54 yrs. old | 168 | 37 |
| 55-65 yrs. old | 26 | 6 |
| Missing | 22 | 5 |
| Household Income | | |
| Under \$25,000 | 14 | 3 |
| \$25,000-\$50,000 | 67 | 15 |
| \$50,000-\$75,000 | 82 | 18 |
| \$75,000-\$100,000 | 101 | 22 |
| \$100,000 or above | 156 | 34 |
| Missing | 39 | 8 |
| Educational Attainment | | |
| Did not graduate high school | 1 | <1% |
| GED | 3 | <1% |
| High school diploma | 19 | 4 |
| Some college | 74 | 16 |
| Undergraduate degree | 173 | 38 |
| Some graduate school | 43 | 9 |
| Graduate degree | 123 | 27 |

Table 3.3
Percentages of work & homeschooling, political leanings and religious activity

| Category | <i>n</i> | Percentage of sample |
|---------------------------|----------|----------------------|
| Work per week | | |
| Do not work | 247 | 54 |
| >5 hrs | 45 | 10 |
| 5-10 hrs | 46 | 10 |
| 10-20 hrs | 42 | 9 |
| 20-30 hrs | 21 | 5 |
| >30 hrs | 36 | 8 |
| Missing | 22 | 5 |
| Political Leanings | | |
| Apolitical | 17 | 4 |
| Liberal | 63 | 14 |
| Moderate | 51 | 11 |
| Conservative | 263 | 57 |
| Libertarian | 37 | 8 |
| Missing | 28 | 6 |
| Religious Activity | | |
| Never | 45 | 10 |
| Occasionally | 26 | 6 |
| Few times per year | 23 | 5 |
| Monthly | 17 | 4 |
| Weekly | 320 | 70 |
| Missing | 28 | 6 |

Table 3.4
Percentages of no. of children, no. of yrs. homeschooling, intention to continue

| Category | <i>n</i> | Percentage of sample |
|------------------------------|----------|----------------------|
| Number of Children | | |
| 1 | 41 | 9 |
| 2 | 128 | 28 |
| 3-4 | 186 | 41 |
| 5-6 | 55 | 12 |
| 7 or more | 24 | 5 |
| Missing | 25 | 5 |
| Years Homeschooling | | |
| >1 yr | 23 | 5 |
| 1-2 yrs | 45 | 10 |
| 3-4 yrs | 59 | 13 |
| 5-6 yrs | 56 | 12 |
| 7 or more | 249 | 54 |
| Missing | 27 | 6 |
| Intention to Continue | | |
| Will not continue next year | 6 | 1 |
| Probably will not | 3 | <1% |
| May homeschool | 7 | 2 |
| Probably will | 57 | 12 |
| Certain to homeschool | 341 | 74 |
| Last child will graduate | 23 | 5 |
| Missing | 22 | 5 |

Table 3.5
Motivations for homeschooling

| Category | <i>n</i> | 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 |

Unit of Analysis

A potential confound in the study could result from parents holding more than one child in mind when answering the survey questions. There is some evidence in the literature that homeschool parents' reasons for and style of homeschooling change over time as they gain experience and engage in the broader homeschool community (Hollinga, 1999; Van Galen, 1989). It is assumed that this change eventually stabilizes. For this reason, I addressed this potential confound by asking participants to consider the child they had homeschooled the longest (which may not necessarily be their oldest child) when answering the questions that asked them to reflect upon their pedagogy. The demographic data for this child of interest follows:

Characteristics of Child of Interest

Fifty-two percent ($n = 238$, 52%) of the students held in mind were male; 46% ($n = 213$) were female; and 2% were not reported. Of these, participants indicated 27% ($n = 125$) were in an elementary grade (i.e., K-5th); 19% ($n = 89$) were indicated as in a middle school grade (6th-8th) and 51% ($n = 232$) were indicated as in high school (9th-12th). See Table 3.6. Thirty-three percent of these students ($n = 149$, 33%) had been homeschooled > 10 years, 37% ($n = 168$) had been homeschooled between 5-10 years, and 19% ($n = 138$) between 1-4 years. Parents were asked to indicate how frequently they were required to report test scores or other progress reports for this child to a governing agency; such as, an umbrella organization, state or local authority. Forty-two percent ($n = 191$, 42%) indicated they are never required to submit progress reports for this child, 31% ($n = 139$) indicated they are required to submit progress reports annually and 22% ($n = 100$) indicated they must submit progress reports more than once a year. See Table 3.6.

Table 3.6
Percentages of gender, grade, reporting, and no. years homeschooled for child of interest

| Category | <i>n</i> | Percentage of sample |
|------------------------------------|----------|----------------------|
| Gender | | |
| Male | 238 | 52 |
| Female | 213 | 46 |
| Grade Level | | |
| Pre | 10 | 2 |
| K-2 nd | 57 | 12 |
| 3 rd -5 th | 68 | 15 |
| 6 th -8 th | 89 | 19 |
| 9 th -10 th | 65 | 14 |
| 11 th -12 th | 167 | 36 |
| Progress Reporting | | |
| Never | 191 | 42 |
| Every few years | 26 | 6 |
| Annually | 139 | 31 |
| Several times a year | 78 | 17 |
| Monthly | 15 | 3 |
| Weekly | 7 | 2 |
| Yrs Homeschooled | | |
| 1-2 yrs | 75 | 17 |
| 3-4 yrs | 63 | 14 |
| 5-6 yrs | 66 | 15 |
| 7-8 yrs | 59 | 13 |
| >9 yrs | 192 | 42 |

Measures

Nine measures were used to assess parental support for autonomy, competence and relatedness; efficacy for homeschooling, basic need satisfaction, teaching practices, underlying motivations for homeschooling, perception of target student's school engagement and demographics. The majority of measures were existing measures used in extant research but not previously established as reliable and valid for use with a homeschool population. All measures were adapted for a homeschool context. The teaching practices survey, motivations for homeschooling and school engagement measures were specifically designed for this study. Previously obtained reliability and validity are reported for previously used measures when available. Reliability and validity with the main study sample are reported in Chapter 4.

Support for Autonomy

As reported previously, the Problems in School Questionnaire (PIS) developed by Deci, Swartz, Scheinman and Ryan (1981) was adapted for a homeschool context for this study. The PIS was originally intended to measure support for student autonomy in a school setting. 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 4 subscales which represent points along a continuum from highly controlling to highly autonomy supporting. 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. The PIS has been used in empirical studies with teachers and parents to assess their global motivating orientation which has been found to be relatively stable

over time (Cai et al., 2002; Deci, Nezlek, et al., 1981; Deci, et al., 1981; Flink, Boggiano, & Barret, 1990; Guay, Boggiano, & Vallerand, 2001; Hoy & Woolfolk, 1990; Reeve, 1998; Reeve et al., 1999). Deci, et al. (1981) reported Cronbach's alphas for the four subscales as .70 (high control), .69 (moderate control), .63 (moderate autonomy) and .76 (high autonomy) in a sample of 68 K-6th grade teachers. It has also been used with parents to assess their preference for a teacher's motivational style. Cai et al. (2002) found all eight vignettes (unaltered) produced consistent scores with a homeschool sample; however, no other correlational measures were reportedly used to validate these scores. (As reported in Chapter 2, Cai et al., 2002, found the religiously-motivated homeschooling parents reported a more controlling motivational style than experienced classroom teachers.)

As originally designed, the PIS yields a single score between -18 and +18, with a controlling motivating style having a more negative score. The four subscales were originally constructed to be highly autonomy supporting (HA), moderately autonomous (MA), moderately controlling (MC) and highly controlling (HC). However, Reeve et al. (1999) found the MA scale was better conceptualized as slightly controlling (SC) because it correlated more highly with the MC and HC subscales than with the HA subscale. This anomaly was initially reported in Deci, et al., 1981. Reeve's proposed a scoring modification to reflect this conceptual reassignment: the summed and averaged scores for HA is weighed as +2, HC is weighed as -2, MC is weighed as -1 and SC (formerly MA) is weighed as 0. These subtotals are added together to form a composite score which reflects a person's global motivational orientation. Reeve's scoring procedure was followed for this study; as the SC subscale also correlated more strongly with the MC and

HC subscale in these data. See Table 4.1. Reeve's scoring procedure yields scores between +11 and -19; with higher numbers indicating a more autonomy supportive motivational orientation.

The initial revised version of the PIS was piloted with 50 homeschool parents from a nonsectarian co-op in South-Central Pennsylvania. Several of the alpha levels for the four subscales did not reach desirable levels (HA = .57, SC = .75, MC = .68, HC = .70). Follow up interviews with participants indicated some of the vignettes and options for addressing the proposed problem in school were confusing or not meaningful in a home school setting. To address this issue, several of the vignettes and problem-solving options were again revised based upon the feedback and two additional vignettes were designed to help increase reliability.

An example of an original vignette from the PIS followed by a vignette modified for a homeschool context follows:

Jim is an average student who has been working at grade level. During the past two weeks he appeared listless and has not been participating during reading group. The work he does is accurate but he has not been completing assignments. A phone conversation with his mother revealed no useful information. The most appropriate thing for Jim's teacher to do is:

1. She should impress upon him the importance of finishing his assignments since he needs to learn this material for his own good. (Moderately controlling)
2. Let him know that he doesn't have to finish all of his work now and see if she can help him work out the cause of the listlessness. (Highly autonomous supportive)
3. Make him stay after school until that day's assignments are done. (Highly controlling)
4. Let him see how he compares with the other children in terms of his assignments and encourage him to catch up with the others. (Slightly controlling)

Rewritten as:

Jim is an average student who has been working at grade level. During the past two weeks he has appeared listless and uninterested in his schoolwork. The work he does is accurate but he has not been completing assignments. The most appropriate thing for Jim's mother to do is:

1. She should impress upon him the importance of finishing his assignments since he needs to learn this material for his own good. (MC)
2. Let him know that he doesn't have to finish all of his work now and see if she can help him work out the cause of the listlessness. (HA)
3. Make him stay inside until that day's assignments are done. (HC)
4. Show him where he needs to be in his assignment book if he wants to finish his school year on time. (SC)

An example of an added vignette is as follows:

Your son does not like to express himself in writing and he complains about the writing program you used with all his older siblings. The best thing to do to increase his motivation in this area is:

1. Show him some examples of his siblings' writings when they were his age. (SC)
2. Offer to increase his computer time if he puts more effort into his writing. (HC)
3. Allow him to choose other topics to write about other than those assigned in the book. (HA)
4. Stress the importance of writing and point out all his other siblings learned to write well using this program. (MC)

The measure was piloted again with a new set of 49 home school parents from a Philadelphia-area co-op. The alpha levels reached acceptable levels with this sample (HA = .72, SC = .74, MC = .72, HC = .79). The final revised version of the PIS adapted for a home school setting can be found in Appendix A.

Support for Competence

The Patterns of Adaptive Learning Scales (PALS), developed by Carol Midgley and colleagues at the University of Michigan, have been used widely in goal theory research since the late 90's. This set of scales has been used with students (e.g., Roeser, Midgley & Urdan, 1996), teachers (e.g., Kaplan, Gheen & Midgley, 2002) and parents (e.g., Kim, Shallert & Kim, 2010). Psychometric analyses of these scales show the presence of three latent component factors: mastery goal orientation ($\alpha = .83$), performance approach goal orientation ($\alpha = .86$) and performance avoidance goal orientation ($\alpha = .74$) (Midgley et al., 1998). Acceptable Cronbach's alphas for the teacher/parent scale have been reported in previous studies (e.g., Kaplan, Gheen & Midgley, 2002, $\alpha = .71$; Kim, Shallert & Kim, 2010, $\alpha = .70$).

For this study, the 10 item, teacher's mastery goal structure scale was used as a proxy for support for competence. Minor adjustments were made to adapt the scale to a homeschool setting (e.g., *in this school* was changed to *in this home school*). The scale was also adapted to fit the unit of analysis (e.g., *in this school a lot of the work students do is boring and repetitious* to *in this home school a lot of the work this student does is boring and repetitious*.) The scale asks subjects to report the extent of their agreement with statements on a 5 point Likert scale (e.g., In this home school: This student is told that making mistakes is OK as long as s/he is learning and improving; 1 = *strongly disagree*, 3 = *somewhat agree*, 5 = *strongly agree*). A higher score indicates a greater degree of mastery goal orientation by the teacher. One item is reverse scored. Then all items are summed and averaged across the 10 items to yield a support for competence

score with minimum and maximum values between 1 and 5, respectively (see Appendix B). Cronbach's reliability test for the pilot study was acceptable ($\alpha = .72$).

Support for Relatedness

The parent survey of the Positive and Negative Conditional Regard Scale developed by self-determination theory researchers Assor, Roth and Deci (2004) has been used to evaluate the quality of need support for relatedness. Many scales designed to examine the need support for relatedness operationalize this construct as the amount of time and resources allocate to a child by a parent or teacher. Because of the high level of time and resource commitment homeschooling requires, I predicted little meaningful differences among types of home schools along these dimensions. However, I hypothesized that there would be meaningful differences among types of home schools in the *quality* of that relatedness. The conditional regard construct is a promising dimension to consider as it examines the quality of the parent-child relatedness along the dimension of psychological control. Within SDT research conditional regard is characterized as love withdrawal and contingency-based interpersonal acceptance (Assor, Roth & Deci, 2004). Assor and Roth's research regarding conditional regard has identified parental use of conditional negative regard (PCNR) (i.e., emotional withdrawal and rejection as punishment) and conditional positive regard (PCPR) (i.e., praise and acceptance as a reward) as two distinct constructs which both undermine intrinsic motivation in children in the academic domain(e.g., Roth & Assor, 2010). The original scale has been used in several studies to evaluate students' and adults' retrospective reports of their own parents' use of conditional regard (Assor, Roth, & Deci, 2004; Assor, Roth, Israeli, Freed, & Deci, 2007; Roth, 2008; Roth, Assor, Niemiec, Ryan, & Deci, 2009). The parent's self-reported

use of both PCNR and PCPR version was recently developed by Assor and Roth (2010) and used with a study of 102 mothers and 94 fathers in Israeli (Cronbach alphas for mothers PCNR=.70, PCPR=.66; for fathers PCNR=.76, PCPR=.84). Avi Assor made this measure available to me, and Avi Kaplan translated it into the English. Each item on the two stems of the measure is scored on a scale of 1-5, with a higher score indicating greater use of PCR. The scale then produces two scores; one for PCNR and one for PCPR, with minimum and maximum scores falling between 1 and 5, respectively (see Appendix C). Acceptable Cronbach's alphas were established with the first pilot study group (PCPR $a = .82$; PCNR $a = .76$). In the main study, PCNR and PCPR were highly correlated ($r = .665$) and a confirmatory factor analysis showed all items loaded on a single factor. Multicollinearity is a particular concern in cluster analysis. To avoid this, a composite score for Parental Conditional Regard (PCR) was calculated and entered as one variable for all analyses.

Academic Engagement

As a proxy for student outcomes, I designed an academic engagement scale based upon John Marshall Reeve's (2002) chapter in *Handbook of Self-Determination Research*. In his field research (Reeve, 1998; Reeve et al., 2002) successfully trained teachers to recognize autonomous motivation in students through behavioral and affective clues. I used his list of observable clues (e.g., persistence, effort, interest, enjoyment) to create a measure designed to tap parent's perception of the target student's engagement. Reeve's list also correlates with the behavioral and emotional components of school engagement identified by Fredricks et al., 2004. (Fredricks and colleagues found teachers could not reliably detect the quality of student cognition--the third component of school

engagement--in her review of the research on school engagement. For this reason I did not attempt to include that component in this measure.) The eight-item Likert-like scale measured the quality of a student'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/her school studies? 1 = *never interested*, 3 = *sometimes interested*, 5 = *always interested*). Two items are reversed scored and then scores on all items were summed and averaged with higher scores representing a higher degree of perceived academic engagement (see Appendix E). An additional item asked parents to indicate the overall quality of the student's work on a scale of 1- 5 (1 = *poor*, 3 = *satisfactory*, 5 = *excellent*). Scores on this item highly correlated with all other items on the academic engagement scale and exploratory factor analysis showed the nine items loaded on a single factor. For this reason the additional item was included in the composite score for academic engagement. Higher scores indicate a higher quality of academic engagement with scores between 1 and 5 representing the minimum and maximum scores, respectively. This scale had a Cronbach's alpha of .88 within the first pilot study group.

Efficacy for Homeschooling

This 4 item, 7 point Likert-like scale designed by Deci and Ryan has been used in SDT research to tap the motivators' (e.g., parents, coaches, teachers, managers) own sense of competence in a specific domain. Reported alpha levels of internal consistency have been above .80 (e.g., Williams & Deci, 1996; Williams, Freedman & Deci, 1998). It 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 average, with higher scores indicating higher efficacy for homeschooling (see Appendix F). Minimum and maximum scores fall between 1 and 7, respectively. The results of the pilot study yielded a Cronbach's alpha of .88 for this scale.

Need Satisfaction

As a measure of parent outcomes, I included a 21 item, 7-point Likert-like scale also designed by Deci and Ryan and adapted for the domain of homeschooling. The scale has been used to assess need satisfaction in the domain of work (e.g., Baard, Deci & Ryan, 2004), relationships (La Guardia, Ryan, Couchman & Deci, 2000), physical education (Ntoumanis, 2005) and overall life satisfaction (e.g., Gagné, 2003). Acceptable alpha levels have been reported in this research. The scale has three subscales (i.e., autonomy, competence and relatedness) which are individually summed and average after reverse scoring items worded in the negative. Higher scores on each of the subscales are associated with higher need satisfaction (see Appendix G). The initial pilot study yielded an overall Cronbach's alpha of .85; alphas for the subscales were need for autonomy $a = .45$, need for relatedness $a = .87$ and need for competence $a = .75$, respectively. An additional item was added to the need for autonomy scale to improve overall reliability in the main study.

Teaching Practices

For the exploratory aspect of this study I developed a 42 item, 7 point Likert-like scale which asked the teaching parent to indicate how frequently 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*) a particular teaching practice

was employed with the student homeschooled the longest. Items were drawn from the literature on teaching practices associated with need-support (e.g., Reeve, 2002; 2006) and from a content analysis of homeschooling practices taken from a review of books and websites related to homeschooling. In addition, participants in the first pilot study were asked to provide any additional teaching practices they used frequently which were not listed. No additional items emerged from the pilot. This measure was used to identify those teaching behaviors that correlate significantly with certain types of home schools (see Appendix D). The pilot study did not include sufficient power for factor analysis of this scale, so that was reserved for the main study. The exploratory factor analysis for this measure is reported in the results section (Chapter 4).

Motivations for Homeschooling

Participants were asked to respond with a short answer to the question “Please list your initial reasons for deciding to homeschool. Was there a particular event or experience that contributed to your decision to homeschool?” A content analysis of these data was completed and as reported earlier, ten main themes emerged. During the initial iterative phase of analyzing the data, an inductive approach was used. The themes that emerged were then compared to the list of categories generated by the NCES data collection across 1999, 2003 and 2007. As several of my themes aligned, the seven NCES categories were adopted in all but one instance (the category “a nontraditional approach to child’s education” was relabeled “to provide a child-centered approach to education”). Additionally, two other themes aligned with motivations identified in recent qualitative studies; e.g., family closeness (Wyatt, 2008) and pragmatic reasons (Coleman, 2010). One new theme emerged from this data set which we labeled “influenced by other

homeschoolers,” which included those who reported observing the lifestyle or outcomes of homeschooling in others or those who reported knowing a homeschooler who talked to them about the benefits. In assigning responses to particular categories, the constant comparative method was used (Glaser & Strauss, 1967). In this instance, responses are systematically compared to all other responses assigned to that category. Qualitative content analysis also allows text to be assigned to multiple categories (Tesch, 1990). A sample of the responses was then coded by another trained investigator. Inter-coder reliability was assessed at .88. Internal consistency of the category assignments were reassessed again after several weeks’ laps in reviewing the data.

Demographic Questionnaire

A demographic questionnaire was included to answer, in part, the third research question; i.e., family-, parent-level factors, associated with differences among types of home schools detected. Demographic characteristics included age, gender, race, marital status, and highest levels education and income of the participant. Data on the number of children and grade levels taught were collected as well. Other personal characteristics of interest included political and religious activity, the degree of regulation and oversight parents received at the state or local level as well as the parent's intention to persist in homeschooling. In addition parents were asked to indicate if any of their children had special needs. Religiosity was operationalized as frequency of attendance at religious services (e.g., *never, occasionally, a few times a year, monthly, weekly*).

Procedures

Data Collection

Participants for the main study were recruited via e-mail announcements or blog postings which came from the affinity groups' organizers. (To assure participants of anonymity, I was not given access to e-mail addresses.) I provided the text for the announcement which could be copied and pasted into the body of the e-mail or included as an attachment. The group's organizer provided an introduction and endorsement of the study. Organizers were permitted to preview the study before deciding to participate. The announcement included a brief description of the study, the potential benefits to the homeschool community at large and disclosed my concurrent affiliation with the homeschool community. Participants were assured participation was voluntary and instructions for opting out of further e-mail contact was also provided. Participants were offered a \$5 Amazon gift card for participating or opportunity to enter a \$100 Amazon gift card sweepstakes. Participants were assured their responses would be kept confidential. With the exception of the blog posting, the initial e-mailed announcement was followed with another invitation to participate a week later. Organizers were asked to follow this with a third prompting an additional week apart, but in most cases this did not happen.

Apparatus

Survey Monkey Pro was used to collect all data from the pilot and main studies. Survey Monkey Pro is an online survey tool that provides secure SSL encryption and allows IP addresses to be suppressed so identifying data are not collected. Further, it allows participants to complete a survey during multiple sessions. It also allows for

rewards to be offered and distributed through a third party provider; again, in order to protect anonymity. In addition, to compensate for order effect, Survey Monkey Pro allows the randomization of questions within measures and this option was selected.

The pro version allows data to be downloaded directly into SPSS for analysis. Unique links were created for each affinity group and embedded into the e-mail or blog post announcing the study. This allowed me to better approximate the overall response rates for each group. Informed consent was obtained on the first page of the study. Data collected from all links were merged in SPSS to form the final data set for all analyses.

Data Analysis

In this section the data analysis procedures are described, including calculating descriptive statistics, screening for assumptions, handling of missing data, and primary analysis methods for each of the research questions. The results of these analyses are reported in Chapter 4

Descriptive Statistics

Means and standard deviations were calculated for all the variables. In addition, Pearson correlations among all variables were calculated including all subscales on the PIS and Basic Need Satisfaction scales, overall support for autonomy, support for competence, support for relatedness, school engagement, efficacy for homeschooling, overall basic need satisfaction, and four factors identified on the teaching practices survey. Cronbach's alpha reliabilities were calculated for each of the scales to determine the internal consistency reliability of the variables with this sample of participants (results presented in Chapter 4). Because this was a descriptive and exploratory study, some

assumptions are not critical as I am not generalizing from my findings (e.g., normality of distribution) (Field, 2005). Additionally, the large sample size for this study reduced concerns about violation of assumptions (Field, 2005). However, I did screen for assumptions of relevant statistical tests, which included factor analysis, cluster analysis, MANOVA and ANOVA. Factor analysis assumes 1) appropriate sample size 2) variables are suited for correlational analysis, 3) normality of distribution, 4) linearity between variables and 5) factorability. In cluster analysis, univariate, multivariate outliers, which can significantly influence results and multicollinearity, are particular concerns (Aldenderfer & Blashfield, 1984). The ANOVA is relatively robust to violations of assumptions when sample sizes are large or group sizes are relatively equal, provided these are not too severe (Field, 2005): 1) these include normality of distribution within groups and 2) homogeneity of variance. Problems resulting from violations of homogeneity of variance can be corrected (Field, 2005).

Normality

In order to screen for univariate normality of the data, I inspected histograms and box plots for each of the variables. Additionally, I requested SPSS to report the skewedness and kurtosis for each of the variables. To check for multivariate outliers, I calculated the Mahalanobis D^2 for the three variables used for cluster analysis. A case is considered a multivariate outlier if the probability associated with its D^2 is .001 or less. These results are reported in Chapter 4.

Homogeneity of Variance

Levene's test statistic was used to screen the variables used in the ANOVAs for

homogeneity of variance. Where the test was significant, post hoc analysis was performed using Dunnett's T3; otherwise, Tukey's post hoc analysis was used.

Multicollinearity

Variables that are too highly correlated potentially represent the same underlying factor. To include highly correlated variables in a cluster analysis is to effectively weight the underlying factor over other variables (Aldenderfer & Blashfield, 1984). To offset this, composite scores from highly correlated variables should be entered into the analysis.

Linearity

Before performing exploratory factor analysis (EFA) on the teaching practices variables, I checked for linear relationships between variables using the scatterplot graph option in SPSS.

Missing Data

Because of the length of time it took to complete the measures (approx. 50 minutes), missing data were a concern that needed to be systematically dealt with. First, participants who did not complete the first measure (40 questions) were eliminated. Then Little's MCAR test was performed on the remaining data set. The test was not significant, meaning the data were missing at random; also, less than 5% of the data were missing on any one variable (with the exception of the qualitative response to reasons for homeschooling. This is further explained in Chapter 5). Scores for missing data were replaced with the mean for that case if less than 50% of the scores for a measure were missing. (I did not use this procedure on the teaching practices survey, as external validity for this measure has not been established.) Sixty-five cases were then added to

the final number of the cluster analysis through this method. Listwise deletion was used in further analyses to deal with the remaining missing data.

Research Question 1: Naturally-Occurring Types of Home Schools

In order to answer the first research question, I conducted a cluster analysis on the data set using z -scores for the support for autonomy measure (PIS), support for competence measure (Mastery Goal Structure) and support for relatedness measure (Conditional Regard) as clustering variables. Clustering is an important tool in the scientific project of classification, a fundamental step in defining and understanding a domain. This approach allowed a preliminary picture of the current pedagogical diversification within a homeschool sample to emerge conceptually as cluster analysis maximizes within-group homogeneity and between-group heterogeneity.

To formulate the clusters, I first used Ward's hierarchical agglomerative method and a squared Euclidean distance as a measure of similarity. This method is designed to optimize the minimum variance within clusters (Ward, 1963). Hierarchical agglomerative methods sequentially merge the most similar cases until all cases are amassed into one large cluster. This method produces a dendrogram (a tree-like diagram) which can be visually inspected to aid in determining the best cluster solution. However, there are two problems with this method that should be addressed: 1) this method makes only one pass through the data and a poor early partitioning of the data set is not modified in later stages (Gower, 1967) and 2) the solution is often not stable or replicable when cases are reordered or dropped from the data set (Aldenderfer & Blashfield, 1984). A two-step process to clustering is recommended (Gore, 2000; Hair, Anderson, Tatham, & Black, 1998; Tan, Steinbach, & Kumar, 2006). A hierarchical agglomerative method is used to

identify the best number of clusters indicated in the data set, followed by an iterative partitioning process which begins by specifying the number of clusters to form from the data set. Iterative partitioning allows data points to be reassigned and the centroids to change with each pass through the data. This process continues until no data points change clusters. I used the *k*-means passes, which reassign cases during each pass to the cluster with the nearest centroid. This two-step process of clustering is the one most commonly used in social science research (Aldenderfer & Blashfield, 1984).

To examine the utility of these group profiles, a series of group difference analyses were followed. With the emergent cluster groups as the independent variable, a MANOVA was performed to determine the goodness of fit and the degree of variance the model explained. Post hoc univariate tests were then conducted to identify the significant multivariate factors (i.e., support for autonomy, competence and relatedness) which typify each group. The results of these analyses are reported in Chapter 4.

To establish the validity of the clusters found in these data, significant differences should be found among the groups on the basis of related variables not used in the clustering (Aldenderfer & Blashfield, 1984). I then performed ANOVAs on the three external variables which served as proxy for parent and student outcomes; and which are theoretically linked to self-determination theory. These included the scores from the basic needs satisfaction, efficacy for homeschooling and student academic engagement scales.

Research Question 2: Teaching Strategies Associated with the Types of Home Schools

To answer the second research question I first submitted the 42 item teaching practices survey to an exploratory factor analysis (EFA). Using listwise deletion, 356 cases were still available for analysis. The KMO statistic of sampling adequacy was .90,

which is considered superior (Hutcheson & Sofroniou, 1999). Descriptive statistics for all variables are reported in Chapter 4. Normality of distribution enhances but is not required for factor analysis as long as the purpose is used descriptively to summarize relationships among variables (Tabachnick & Fidell, 2007). Skewedness and kurtosis are included in the descriptive statistics for the items. Linearity of the variables was determined by inspecting the scatterplots.

Maximum likelihood extraction is recommended when variables are reasonable normally distributed (Fabrigar, Wegener, MacCallum, & Strahan, 1999) with direct oblimin rotation because the underlying factors are assumed to be correlated (Field, 2009). After examining the correlation matrix, I removed ten items on the survey from further analysis because they had a small number of correlations above .3 with other items (Field, 2009). One additional item (*the student takes a test*) was removed because it correlated above .9 with another item (*you give a test*). The remaining variables had correlations in excess of .30 with several other items, thus meeting the assumption for factorability of R (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. So the EFA was repeated based on a five-factor solution. The items in this five factor solution suggested underlying latent factors related to parents' pedagogue intended to 1) monitor the student's progress, 2) promote autonomous motivation, 3) support the need for competence, and 4) exert external control. The fifth factor was labeled "Independent" and suggested the target student was self-monitoring and self-motivating. Table 3.8 shows the final factor solution. The remaining items were retained as singular variables.

Table 3.7
Pattern matrix from EFA for teaching strategies

| Item | Factor No | | | | |
|---|-----------|------|------|------|---|
| | 1 | 2 | 3 | 4 | 5 |
| <u>MONITOR PROGRESS</u> You: | | | | | |
| Grade the student's work. | .780 | | | | |
| Give tests. | .779 | | | | |
| Assign academic work. | .618 | | | | |
| Enforce deadlines. | .493 | | | | |
| Evaluate student work. | .461 | | .429 | | |
| Show student how to answer problems or questions. | .386 | | | | |
| Set a schedule for student to follow. | .374 | | | | |
| <u>SUPPORT AUTONOMOUS MOTIVATION</u> You: | | | | | |
| Ask student what he/she would like to study or do. | | .778 | | | |
| Take a field trip. | | .591 | | | |
| Take student's preferences into consideration. | | .677 | | | |
| Use projects to promote learning. | | .558 | | | |
| Encourage student to pursue his/her interests. | | .480 | | | |
| Allow student to choose his/her books or activities | | .421 | | | |
| Explain the reason for learning the material. | | .375 | | | |
| <u>SUPPORT NEED FOR COMPETENCE</u> You: | | | | | |
| Talk with student about the things he/she is learning. | | | .777 | | |
| Encourage questions about what the student is learning | | | .642 | | |
| Give student feedback on the quality of his/her work. | | | .598 | | |
| Praise the student for his/her progress | | | .538 | | |
| Ask the student to explain something he/she is learning to you. | | .342 | .518 | | |
| Encourage student to persist in his/her efforts. | | | .530 | .373 | |

Table 3.7 *continued*EXERT CONTROL You:

| | |
|--|------|
| Address unacceptable behavior. | .859 |
| Address negative attitudes. | .848 |
| Use loss of privileges as an incentive for doing work. | .704 |
| Use rewards as an incentive for doing work. | .513 |
| Redirect student attention back to schoolwork. | .499 |
| Point out areas that need to improve. | .505 |

STUDENT INDEPENDENCE Student:

| | |
|---|------|
| Participates in classes conducted online. | .685 |
| Uses a tutor or teacher other than you. | .671 |
| Uses activities or material found online. | .580 |
| Is responsible for managing his/her time. | .507 |
| Self-checks his/her work. | .487 |

Note: Only factors of .30 or greater are shown

Following the EFA, I calculated composite scores for these five variables and conducted multi and univariate analysis of variance for these on cluster group assignment. The results of these analyses and post hoc comparisons are reported in Chapter 4. Similar univariate analyses were performed with the remaining single-item variables.

Research Question 3: Family-level, Parent-level, Child-level Differences

In order to answer question 3, I examined the categorical and continuous variables included in the demographic survey. Chi-square tests were used to examine the categorical variables and ANOVAs were performed on the continuous ones. Examining group differences on the external variables also contributes to the validity of the cluster solution (Aldenderfer & Blashfield, 1984). The results of these analyses are presented in Chapter 4.

CHAPTER 4 RESULTS

Descriptive results for the variables used to answer research questions one and three are presented below. The following variables demonstrated satisfactory psychometric properties: moderate control, high control, mastery goal structure, conditional regard, overall need satisfaction, need for relatedness, need for competence, and academic engagement. However, the following variables were significantly negatively skewed: high autonomy orientation, efficacy for homeschooling and need for autonomy subscale; indicating this sample of homeschool parents reported a high autonomy-supportive orientation on the PIS, and also reported high levels of efficacy for homeschooling and autonomy need satisfaction. The slight control subscale of the PIS had a less than satisfactory Cronbach's alpha coefficient ($\alpha = .67$). In following Reeve's recommended scoring procedure, though, this subscale was effectively canceled out.

Tables 4.1
Descriptives for variables used to answer research questions one and three

| Variable | <i>N</i> | <i>M (SD)</i> | Skewness | Kurtosis | Alpha |
|--------------------|----------|---------------|----------|----------|-------|
| Problems in School | 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 | 457 | 4.06 (.52) | -.435 | -.102 | .71 |

Table 4.1 *continued*

| | | | | | |
|----------------------|-----|------------|-------|-------|-----|
| Cond 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 HomeSch | 457 | 6.11 (.92) | -1.10 | .661 | .89 |
| 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 |

Table 4.2 reports the descriptives for the teaching practices survey. Items removed from the factor analysis are reported first, followed by the items that comprised the composite scores for the student independence, monitoring, support for autonomous motivation, support for competence and use of external control factors. Overall, this sample of homeschool parents reported using the following teaching practices most frequently: 1) *resources other than textbooks*, 2) *student manages his/her own time*, 3) *talk with the student about what he/she is learning*, 4) *encourage questions about what the student is learning*, 5) *praise student for his/her progress* and 6) *ask student to explain something he/she is learning*. Overall, this sample of homeschool parents reported using the following teaching practices most infrequently: 1) *classes at a local private or public school*, 2) *college classes locally*, 3) *rewards as an incentive for doing*

work, 4) *loss of privileges as an incentive for doing work*, 5) *take a field trip related to academic work* and 6) *give a test*.

Table 4.2

RQ2: 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 | <i>N</i> | <i>M (SD)</i> | 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 (1.7) | -.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/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/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/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/her books or activities | 447 | 4.7 (1.9) | -.383 | -.877 | .78 |
| encourage student to pursue his/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/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 | |

Table 4.2 *continued*

| | | | | | |
|--|-----|-----------|--------|-------|-----|
| You: (SUPPORT FOR COMPETENCE SCALE) | | | | | .83 |
| encourage the student to persist in his/her efforts | 447 | 5.3 (1.4) | -.469 | -.314 | |
| 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/her work | 448 | 5.1 (1.5) | -.449 | -.253 | |
| talk with the student about things he/she is learning | 444 | 6.1 (1.2) | -1.067 | .760 | |
| ask the student to explain something he/she is learning | 443 | 5.4 (1.3) | -.594 | .032 | |
| You: (EXTERNAL CONTROL SCALE) | | | | | .86 |
| redirect student's attention back to his/her schoolwork | 447 | 4.9 (2.0) | -.602 | -.813 | |
| 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 | |

Correlations

Zero-order correlations among the substantive variables are presented in Table 4.3. All the variables used for the cluster analysis (PIS, mastery and conditional regard) were significantly correlated in the expected direction. The PIS and mastery goal structure were positively correlated, effect size was medium ($r = .37, p < .01$), while PIS and mastery were negatively correlated with conditional regard ($r = -.501, -.223, p < .01$), effect sizes were large and small to medium, respectively. 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), which was used to examine differences and effect size following the cluster analysis.

The PIS subscales also were correlated in the expected direction. High autonomy orientation and slight control were positively correlated with a small effect size ($r = .15, p < .01$). High autonomy was non-significantly correlated with moderate control, and the correlation between high autonomy and high control was small and negative ($r = -.16, p$

<.01). The slight-, moderate- and high control variables all had large, positive correlations; further supporting the decision to follow Reeve's recommended scoring procedure (r ranging from .53 to .68, $p < .01$).

Efficacy for homeschooling had a small, positive correlation with both the PIS composite score and the high autonomy subscale variable ($r = .19$ and $.23$, $p < .01$), a medium, positive correlation with mastery ($r = .37$, $p < .01$) and a small to medium, negative correlation with conditional regard ($r = -.24$, $p < .01$). Need satisfaction correlated positively (medium effect) with the PIS, mastery, efficacy for homeschooling and school engagement (r ranged from .36 to .49, $p < .01$). It correlated negatively (medium effect) with conditional regard and high control ($r = -.42$, $-.30$, $p < .01$). The parent's perception of student engagement variable was significantly correlated with all variables in the expect direction. It had a medium, positive correlation with efficacy ($r = .40$, $p < .01$), and small, positive correlations with high autonomy, PIS composite score and mastery. It was negatively correlated with a small effect with moderate and high control.

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. Support for autonomous motivation had a medium, positive correlation with mastery ($r = .38$, $p < .01$) and a small positive correlation with high autonomy, PIS composite score, and efficacy (r ranged from .16 to .18, $p < .01$). Support for competence had a large positive correlation with support for autonomous motivation ($r = .52$, $p < .01$) and a medium, positive correlation with mastery ($r = .38$, $p < .01$). It had a small, positive correlation with high autonomy, efficacy and need satisfaction (r ranged from .15 to .29,

$p < .01$). Monitoring correlated most strongly and positively with both competence and control ($r = .57, .59, p < .01$); it also, had a medium, positive correlation with support for autonomous motivation ($r = .24, p < .01$). It negatively correlated with PIS composite score, engagement and need satisfaction, but with small effect sizes (r ranged from $-.11$ to $-.29, p < .01$). The use of external control variable correlated positively and most strongly with high control orientation on the PIS, conditional regard and monitoring ($r = .36, .34, .59; p < .01$); it also had medium, positive correlations with support for autonomous motivation and competence ($r = .34, .45; p < .01$). Use of control was most strongly and negatively correlated with engagement ($r = -.53, p < .01$) and also had small, negative correlations with PIS, efficacy and need satisfaction (r ranged from $-.11$ to $-.29, p < .01$)

Student independence negatively correlated, with a medium effect size, with control ($r = -.31, p < .01$) and negatively, with a small effect, correlated with monitoring and support for competence ($r = -.21, -.20; p < .01$). It positively correlated, with a medium to large effect size, with student engagement ($r = .43, p < .01$); and positively, with a small effect, correlated with conditional regard and efficacy ($r = .13, .15; p < .01$).

Table 4.3 Correlation among the variables

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|-------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|---------|---------|---------|----|
| 1.HghAut | — | | | | | | | | | | | | | | |
| 2.SlghtCntr | .148** | — | | | | | | | | | | | | | |
| 3.ModCntrl | .069 | .682** | — | | | | | | | | | | | | |
| 4.HghCntrl | -.157** | .527** | .640** | — | | | | | | | | | | | |
| 5.PIS | .580** | -.435** | -.628** | -.872** | — | | | | | | | | | | |
| 6.Mstry | .365** | -.002 | -.024** | -.198** | .312** | — | | | | | | | | | |
| 7.CndRgd | -.186** | .343** | .386** | .490** | -.501** | -.223** | — | | | | | | | | |
| 8.Effcy | .228** | -.002 | .028 | -.134** | .191** | .370** | -.241** | — | | | | | | | |
| 9.Engmnt | .170** | -.068 | -.048** | -.222** | .236** | .260** | -.310** | .403** | — | | | | | | |
| 10.NdStftn | .304** | -.144** | -.146** | -.304** | .382** | .362** | -.423** | .488** | .371** | — | | | | | |
| 11.Autmov | .182** | .010 | -.076 | -.096* | .169** | .382** | -.012 | .158** | -.005 | -.004 | — | | | | |
| 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** | — | | |
| 14.Cntrl | -.014 | .209** | .214** | .359** | -.285** | .007 | .344** | -.114** | -.530** | -.215** | .340** | .453** | .587** | — | |
| 15.Indp | .035 | .056 | .130** | .014 | -.025 | .056 | .129** | .146** | .431** | .054 | -.091 | -.212** | -.197** | -.306** | — |

Note: HghAut = High Autonomy Orientation, SlghtCntr = Slightly Controlling, ModCntrl = Moderately Controlling, HghCntrl = Highly Controlling, PIS = Problems in School Composite Score, Mstry = Mastery Goal Structure, CndRgd = Use of Conditional Regard, Effcy = Efficacy for Homeschooling, Engmnt = Parent Perception of Academic Engagement, NdStftn = Need Satisfaction, TEACHING STRATEGIES SCALE: Aut_Mot = Support for Autonomous Motivation, Comp = Support for Competence, Mntr = Monitoring, Cntrl = Use of Control, Indp = Student Independence * $p < .05$, ** $p < .01$.

RQ1: Cluster Analysis

Before performing the cluster analysis, I checked the data for multivariate outliers by calculating Mahalanobis D^2 . None of the cases met the $<.001$ probability threshold, which would indicate high Mahalanobis distance values. In order to equally weight the contribution each variable made to the cluster solution, I standardized all scores before entering them into the clustering procedure.

For the first step of the cluster analysis, I used Ward's agglomerative hierarchical method. The number of clusters was determined by examining the agglomerative schedule, associated dendrogram, and evaluation of group differences along the clustering variables. The most parsimonious solution supported by theory was retained.

The final eight steps of the agglomeration schedule are reported in Table 4.4. The jump in coefficients suggests a four or five cluster solution might be retained. An examination of the dendrogram also supported this conclusion (see Appendix J). The final 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. The four cluster solution explained slightly less than 50% of the variance for the PIS; while the 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, *low need support* cluster and three *mixed need support* clusters which were interpretable. Based upon this analysis, I decided to retain a five cluster solution.

For the second step of the cluster solution, I requested SPSS to create five clusters using a *k*-means iterative partitioning process. This step fine tunes the cluster solution and maximizes the variance explained. A comparison between Ward's hierarchical five

cluster solution and k -means five cluster solutions indicated the variance explained for the PIS and mastery remained the same, but the variance for conditional regard improved 10% through the iterative partitioning.

Table 4.4
Agglomeration of coefficients for last eight clusters and point increases

| Stage | Number of clusters | Coefficients | Point Increase |
|-------|--------------------|--------------|----------------|
| 1 | | 400.760 | 37.52 |
| 2 | 7 | 438.282 | 46.70 |
| 3 | 6 | 484.979 | 64.89 |
| 4 | 5 | 549.873 | 75.92 |
| 5 | 4 | 625.797 | 123.94 |
| 6 | 3 | 749.74 | 182.44 |
| 7 | 2 | 932.176 | 435.82 |
| 8 | 1 | 1368.00 | |

Figure 1 presents the final cluster solution. The y-axis in the figure represents z scores. 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 or moderate effect, and $0.8 SD$ is a large effect (Vansteenkiste, et al., 2009). What follows is a description of the five clusters: Group 1 represented a *high need support* group ($n = 131$, 29%) characterized by a high autonomy orientation (large effect), high mastery orientation (large effect) and low use of conditional regard (large effect). Group 2 ($n = 86$, 19%) was characterized by a moderate autonomy orientation (small effect), slight use of conditional regard (small effect) and low mastery goal structure (large

effect). Group 3 ($n = 103$, 23%) was characterized by a slight autonomy orientation, moderate conditional regard (medium effect) and moderate mastery goal orientation (moderate effect). Group 4 ($n = 88$, 19%) was characterized by moderate control orientation (moderate effect), moderate conditional regard (small to medium effect) and slight mastery orientation. Group 5 ($n = 49$, 11%) represented the *low needs support* group, with large effect sizes for control orientation, use of conditional regard and low mastery orientation.

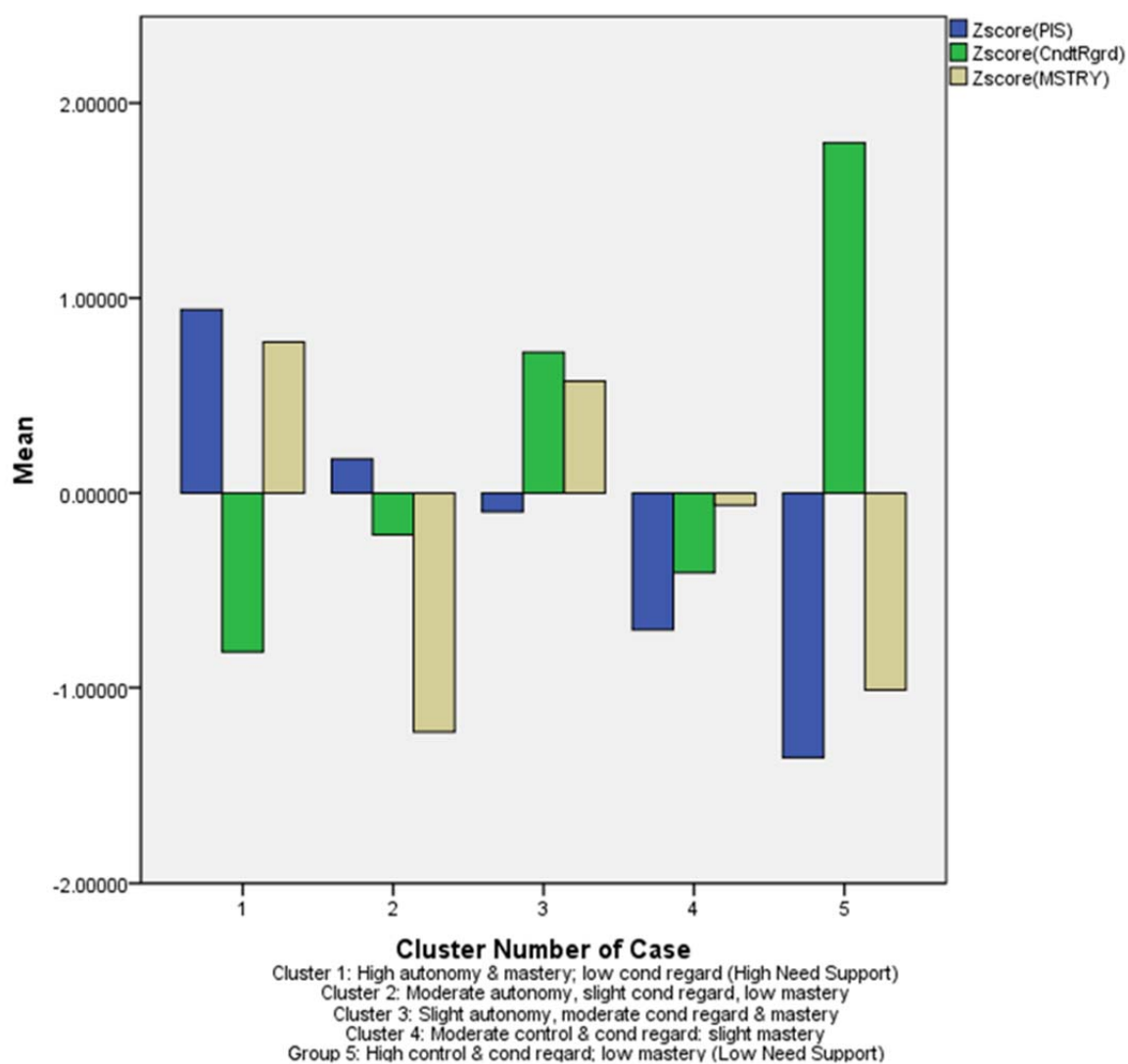


Figure 1 Final Cluster Solution

Before proceeding with further analyses, I evaluated whether the gender and grade level categories for the child of interest were evenly distributed among the groups. Both chi-square tests were non-significant. Descriptive statistics for the clusters and results of follow up analyses are presented in Table 4.5.

Need Satisfaction, Efficacy for Homeschooling and Student Academic Engagement

The validity for the cluster solutions was established by performing univariate analysis of variance with cluster membership as the independent variable and variables not used for clustering as dependent variables (Aldenderfer & Blashfield, 1984). ANOVAs for parent need satisfaction, efficacy for homeschooling and perception of student academic engagement were entered for analysis for this purpose. Need satisfaction differed significantly across groups $F(4,424) = , p < .001, \eta^2 = .26$; Tukey post hoc comparisons among the five groups indicated that Group 1 (*high need support*) differed significantly from all other groups on need satisfaction ($M = 6.26$) and Group 5 (*low need support*) also reported significantly lower need satisfaction ($M = 5.03$) than Groups 2, 3 and 4 (*mixed need support* groups). Student academic engagement differed significantly as well; $F(4, 442) = 13.74, p < .001, \eta^2 = .11$; Tukey post hoc comparisons indicated Group 5 (*low need support*) reported significantly lower student academic engagement ($M = 3.58$) than all other groups, while Group 1 (*high need support*) reported significantly higher academic engagement ($M = 4.21$) than Groups 2 and 3, but not Group 4. Efficacy for homeschooling also differed significantly across groups, $F(4, 452) = 14.53, p < .001, \eta^2 = .12$. Group 5 ($M = 5.5$) and Group 2 ($M = 5.8$) reported significantly lower efficacy for homeschooling than all other groups, while Group 1 ($M = 6.42$) did not differ from Group 3 and 4, but reported the highest mean scores on this variable. See

Table 4.5.

RQ2: Teaching Practices

Next I performed a multivariate analysis of variance (MANOVA) with cluster membership as the independent variable and the five factors (Autonomous Motivation, Control, Competence, Monitoring, and Independence) extracted from the teaching practices measure as dependent variables. Wilk's lambda 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, $F(4, 369) = 9.46, p < .001, \eta^2 = .09$; support for competence, $F(4, 369) = 9.77, p < .001, \eta^2 = .10$; external control, $F(4, 369) = 10.09, p < .001, \eta^2 = .10$; monitoring, $F(4, 369) = 4.47, p < .01, \eta^2 = .05$; and student independence, $F(4, 369) = 3.38, p < .01, \eta^2 = .04$. Tukey's post hoc comparisons showed Group 1 ($M = 4.64$) reported significantly higher use of support for autonomous motivation than Groups 2, 4 and 5. Group 3 ($M = 4.3$) also reported significantly higher support for autonomous motivation than Group 2 ($M = 3.7$). In regards to support for competence, Group 5 again reported significantly lower use of these strategies than all other groups ($M = 4.84$) and Group 1 reported the highest use ($M = 5.77$) which differed significantly from Groups 2 ($M = 5.29$) and 5. Group 3 (moderate mastery orientation) also reported significantly higher use of support for competence strategies than Groups 2 and 5. Group 5 reported significantly higher use of external control ($M = 4.26$) than Groups 1, 2 & 4. Group 1 reported the lowest use of external control ($M = 3.10$). Group 1 reported the least frequent use of the monitoring strategies ($M = 3.80$) and differed significantly from Groups 3 and 4 on this factor. Group 5 reported significantly higher incidents of student independence ($M = 5.16$) than Group 2

($M = 4.34$) and Group 4 ($M = 4.35$). Group 1 ($M = 4.69$) did not differ significantly from any other group on this factor. Overall, Group 1 (*high need support*) reported the highest support for autonomy and competence; and the lowest use of control and monitoring. Group 5 (*low need support*) reported the highest use of control and incidents of student independence; moderate use of monitoring and autonomous motivation and the lowest use of support for competence. Within the mixed need support groups, Group 2, which was characterized by significantly low use of mastery, and moderate support for autonomy and use of conditional regard, reported low use of autonomous motivation, monitoring, control and student independence, and moderate support for competence on this measure. Group 3, which was characterized in the cluster by slight autonomy orientation, moderate mastery and conditional regard, reported high use of strategies associated with support for autonomous motivation, competence, monitoring and control. Group 4, which was characterized by moderate control and conditional regard, and slight mastery, reported low support for autonomous motivation and student independence, moderate use of control and support for competence, and high monitoring. See Table 4.5.

Of the remaining single item variables, significant differences were indicated for the following teaching practices: Group 5 was significantly more likely to take college classes or classes at a local private or public school and take a test than all other groups; and significantly less likely to praise students for progress than Groups 4 and 3. Group 1 and 2 were significantly less likely to set deadlines for students than all other groups. Group 1 was less likely to use resources designed for conventional schools than Group 5. See Table 4.5.

Table 4.5 Z scores of the cluster dimensions and means of external variables and teaching practices factors and variables together with F values and effect sizes.

| Variable | Group 1 n =131 (29%) | Group 2 n = 86 (19%) | Group 3 n =103 (23%) | Group 4 n = 88 (19%) | Group 5 n = 49 (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 (Outcomes) | | | | | | 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 |
| Student Engagement | 4.21 _a | 3.95 _{a,b} | 3.90 _b | 3.99 _{a,b} | 3.58 _c | 13.74*** | .11 |
| Teaching Practices (Question 2) | | | | | | 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 | 5.75 _a | 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 |
| Materials designed for conventional school | 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 classes | 1.59 _a | 1.28 _a | 1.39 _a | 1.54 _a | 2.83 _b | 10.43*** | .10 |
| 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 progress | 5.49 _{a,b} | 5.05 _b | 5.68 _{a,b} | 5.67 _{a,b} | 4.90 _b | 4.81*** | .05 |

Note: Cluster means are significantly different if they have different subscripts. **p<.01, ***p <.001

RQ3: Family-, Parent-, Child-level Differences

For the final research question, I examined the continuous variables for household income, levels of education, hours per week of work concurrent with homeschooling, number of years homeschooling, number of children, degree of external monitoring, political leanings, and religious activity. There were no significant differences on these variables among the groups 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, $F(4, 428) = 7.28, p < .01, \eta^2 = .06$. Group 1 reported significantly less religious activity than Groups 2 and 4. Group 1 was also significantly more left-leaning politically than Groups 2 and 4. Group 5 reported significantly higher hours of work per week than all other groups. And while it did not reach significance, Group 5 reported the highest degree of external monitoring. See Table 4.6.

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. The contingency table for the categorical variables with significant differences is reported in Table 4.7. Only the chi-square test for the gender of the teaching parent had a significant group effect, $\chi^2(4, 434) = 72.32, p < .001$, Cramer's $V = .41$. Close inspection of the percentages revealed that males were over-represented in Group 5 ($n = 17, 58\%$ 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.

Table 4.6
Significant continuous variables among groups

| Variable | Group 1 <i>n</i> = 110 (29%) | Group 2 <i>n</i> = 77 (19%) | Group 3 <i>n</i> = 92 (23%) | Group 4 <i>n</i> = 79 (19%) | Group 5 <i>n</i> = 44 (11%) | <i>F</i> (4, 428) | η^2 |
|------------------------------------|------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-------------------|----------|
| 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 Homeschooling | 2.15 _a | 2.16 _a | 2.16 _a | 1.65 _a | 3.20 _b | 7.28*** | .06 |
| Degree of monitoring | 2.19 | 2.29 | 2.03 | 2.42 | 2.61 | 2.23 | .02 |

Table 4.7
Significant categorical variable among groups

| Category | Group 1 | Group 2 | Group 3 | Group 4 | Group 5 | χ^2 | Cramer's <i>V</i> |
|------------------|---------|---------|---------|---------|---------|----------|-------------------|
| Gender of Parent | | | | | | | |
| Male | 2 | 3 | 3 | 4 | 17 | 72.32*** | .41 |
| Female | 120 | 79 | 96 | 79 | 31 | | |

In order to more fully answer this final research question, I then collapsed the groups across the sample, and examined differences along the parent- and child-level outcome variables of need satisfaction, efficacy, and school engagement with demographic variables. Correlations between these variables are reported in Table 4.8 and Table 4.9. Need satisfaction was positively correlated with the number of years homeschooling, number of children, and religious activity; all with small effects. It also showed a significant negative correlation, small effect, with degree of external monitoring and hours worked concurrent with homeschooling. Efficacy had a significant positive correlation with level of education and a significant negative correlation with number of children; both with a small effect.

I 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 age and grade of the student of interest, as well as the number of years the student had been homeschooled were all positive with relatively medium effect. Finally, I conducted an independent samples 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, $r = .16$.

Table 4.8
Correlations between demographic continuous variables and parent outcome variables

| Variable | Need Satisfaction | Efficacy for Homeschooling |
|--|-------------------|----------------------------|
| Years homeschooling | .172** | .035 |
| Household Income | -.012 | .017 |
| Level of Education | .018 | .136** |
| Number of children | .112** | -.158** |
| Religious Activity | .105* | -.075 |
| Degree of Monitoring | -.121* | -.076 |
| Hrs Worked Concurrent with Homeschooling | -.254** | -.082 |

* $p < .05$, ** $p < .01$

Table 4.9***Correlations between student engagement and child of interest continuous variables***

| Variable | Student Engagement |
|----------------------------|--------------------|
| No. of years homeschooled | .286** |
| Age of the student | .302** |
| Grade level of the student | .351** |

** $p < .01$

CHAPTER 5 DISCUSSION

This study was focused on four broad goals: 1) to extend the extant empirical research into homeschooling as a context for learning; 2) to examine the socio-contextual characteristics of a home school setting which may support or forestall the development of achievement motivation; in particular autonomous motivation for learning; 3) to identify meaningful differences that may exist along this dimension among naturally-occurring types of home schools; and 4) to extend the utility of self-determination theory to this important emerging learning context.

Even while homeschooling continues to show dramatic growth and spread globally, scholarly interest has lagged well behind. Little empirical research exists that is methodologically rigorous or primarily conceived to add to our scientific understanding of this phenomenon. Yet, homeschooling as a context for learning gives educational and developmental psychologists a rare opportunity to examine a natural experiment in American education. Exempt from the requirements of No Child Left Behind, parents have had broad latitude to adapt their pedagogy and learning environment to the needs of the child. But have they? And if so, what motivational orientations and teaching practices characterizes the types of home schools that do?

Constructing Measures Valid for a Home School Context

In addressing the first goal of this study, appropriate measures for investigating a home school setting needed to be adapted or developed. The Problems in School Questionnaire (PIS) used by Cai et al. (2002) with a sample of homeschool parents, and

used broadly in self-determination theory research, did not achieve acceptable alpha levels with this study's initial pilot group. Follow-up interviews revealed parents had questions regarding the meaningfulness of the vignettes in a homeschool setting or did not feel any of the solutions presented were ones they would choose. Several parents reported their strategy for addressing such a problem would "depend upon the child," and they asked to know more about the age and "learning style" of the child in the vignette. This became a common theme in the feedback provided by participants in both pilot studies and the main study. The "uniqueness of the individual child" first reported in Mitchell Steven's qualitative study (2003) as a core value cutting across all demographics of the home school population was the only consistent comment of concern I received from participants about the survey instruments. (This broad theme was also echoed in the predominant reason homeschool parents in this sample gave for choosing to homeschool: the desire to provide a child-centered education). To address the validity issue, I recast the vignettes in such a way that participants could infer the likely age of the student. I also added two vignettes that included the possibility of giving the child with the problem curriculum options or alternative schooling choices as highly autonomous responses – a strategy advocated by self-determination theorists, but difficult to offer as a solution in a conventional setting. After this adjustment, acceptable alphas were reached on the PIS in the second pilot and main study.

I further sought to minimize the confound of parents holding more than one child in mind by narrowing the unit of analysis to the child the parent had homeschooled the longest as the focus of interest for all subsequent measures. Both the mastery goal structure and parental use of positive and negative conditional regard measures achieved

acceptable alphas and did not elicit any questions or negative feedback from participants. However, in contrast with previously reported findings (Assor et al., 2004), the positive and negative conditional regard measures did not emerge as two distinct constructs with this sample, but rather loaded on one factor and thus scores were computed as a single variable.

In addition, the basic need satisfaction and efficacy for homeschooling scales, drawn from self-determination theory research, were adapted for a home school context and served well as proxy for parental outcomes. Conversely, no measure of academic engagement or student motivation I reviewed was suitable for adapting as a proxy for a student outcome; in part, because the constraints of this study required that the measure needed to be administered to the teaching parent. Therefore, I designed a parent's perception of student academic engagement scale, based upon indicators identified by SDT researcher, John Marshall Reeve (2002). This new measure had satisfactory psychometric properties and normal distribution with this sample. Finally, I developed a survey of homeschool teaching practices drawn from the literature on self-determination theory and content analysis of the qualitative literature on homeschooling, as well as from homeschool discussion groups and websites. Parents from the pilot and main studies had the opportunity to provide me with additional teaching practices the survey did not include. No additional items were listed with any frequency. From the 42 items, 30 practices could be combined to suggest five possible latent factors which I have preliminarily labeled as support for autonomous motivation, support for competence, use of external control, monitoring, and student independence. The 12 remaining items, which included those I had originally intended as evidence of support for relatedness,

were retained as single item variables. The teaching practices associated with promoting or forestalling the development of autonomous motivation correlated with the cluster group theory would predict. As such, results from the measure provide perhaps the first attempt to systematically describe the prevalent teaching practices that characterize a home school setting.

Central Tendencies of this Sample

In terms of the second goal: Once suitable measures were developed, then a systematic examination of a home school setting could be undertaken. In this study, I elected to identify the ways in which parents are supporting the development of achievement motivation, *vis-à-vis* the socio-contextual supports they provide. In part, this focus was selected because it is a domain of primary interest to the field of educational psychology, but, more importantly, it is an outcome that is meaningful and of value to the home school population; whereas other outcomes past research has evaluated may not be; e.g., grades, test scores, diplomas. While it is important to contribute to our scientific understanding; it is equally important that our research be of value to the populations we study—especially if we would like that population to be less skeptical about the intentions of researchers. Self-determination theory provided a useful lens for evaluating the socio-contextual features that contribute to the development of achievement motivation: 1) because the broad scope of its premises (e.g., our three basic needs are innate and universal) allow it to readily be extended to a new learning context and 2) its focus on the development of autonomous motivation as the optimal form achievement motivation can take. Not only does autonomous motivation promote academic success, but is associated with a broad array of positive outcomes, such as self-efficacy and well-

being in students. Further, many home school parents report across the qualitative literature, and in this study, that a love for learning is a primary goal of their homeschooling efforts.

To that end, I now turn to summarizing the socio-contextual characteristics that generalize to this sample of home school parents:

It had been my hope to collect a sample that reflected the growing diversity of the homeschool population in the U.S.; I did not achieve that aim. A contributing factor may be that participants were solely solicited online. Another factor may be that newer segments of the homeschool population may not yet have formal networking channels established. This sample is more highly educated, more well-off, and more White than reflected in the 2003 and 2007 NCES samples of home school parents. However, this sample trended toward being less politically conservative and religious (as measured by church attendance and motivations for homeschooling) than other samples (e.g., Ray, 2000; Ray, 2010). The predominant motivations for homeschooling among this sample included: 1) a desire for a child-centered approach (35%); 2) concerns about the [conventional] school environment (e.g., bullying,) (28%); and 3) concerns about the quality of academic instruction at other schools (23%). As such it may represent, in part, the growing “creative class” of homeschoolers identified by researcher Milton Gaither (2009a) and the re-emergence of the Pedagogues first identified by Van Galen (1987).

What is more notable, though, is this sample represented a window into the practices and motivations of highly committed (74% reported they are *certain to homeschool* next year and 5% will not only because their last child is graduating) and

highly experienced (54% have homeschooled seven years or more; another 25% have homeschooled between 3-6 years) home school parents. Therefore the findings of this study can be presumed to be representative and stable features of the types of home schools found in the clusters. Finally, 42% of the sample indicated no monitoring of their homeschool program by outside authorities (e.g., neither state or local officials; nor umbrella organizations) another 31% stated reporting was required only annually. Thus, this sample of home school parents was 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.

In this context, it is significant that overall this sample of highly experienced, highly efficacious, and highly committed homeschool parents reported a high autonomous motivational orientation on the PIS, high mastery goal structure and low use of conditional regard. Further, this correlated with high 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 significantly, parents reported that the child of interest held in mind for the academic engagement measure (in contrast with concerning findings among conventionally-educated students) indicated higher levels of academic engagement the longer the child had been homeschooled and the higher his/her grade level.

Further insight is gleaned from examining the teaching practices that characterized the home schools 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 (Reeve, 2002): They use age-appropriate materials other than textbooks, allow the student the freedom to manage his/her own time, talk with the student about things he/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/her progress. Conversely, they are less likely to use strategies associated with control and which undermine autonomous motivation: They use rewards or loss of privileges infrequently 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 or 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 that many parents in this sample view themselves as 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 self-determination theory's 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).

Meaningful Differences within the Sample

In considering the third aim of this study, I now turn to a discussion of the specific research questions I examined:

RQ1: What naturally-occurring types of home schools may exist along the social-contextual dimensions of support for autonomy, competence and relatedness—three inherent needs self-determination theory posits as necessary for the development of autonomous motivation?

A five cluster solution emerged from the data in this sample with the greatest explanatory power. These five clusters could best be described as Group 1 ($n = 131$, 29%) – *high need support* and Group 5 ($n = 49$, 11%) – *low need support*. Differences along the clustering variables for these two extreme groups were all associated with a large effect size. Within these poles fell three *mixed need support* groups: Group 2 ($n = 86$, 19%) characterized by moderate support for autonomy, modest use of conditional regard and the lowest support for competence of all five groups; Group 3 ($n = 103$, 23%) characterized by slight autonomy, and moderate use of conditional regard and support for competence; and Group 4 ($n = 88$, 19%) characterized by moderate control and use of conditional regard; and modest support for competence. The differences along the clustering variables among these groups represented small to medium effect sizes, with the exception of Group 2, which had a large effect size for low support for competence.

Any clustering method will inherently create significant differences among the groups along the clustering variables; therefore, validity is established by identifying

significant differences along dimensions not used in the clustering (Aldenderfer & Blashfield, 1984). For this purpose I used three variables theoretically linked to SDT: parental basic need satisfaction, parental efficacy for homeschooling, and parental perception of student academic engagement. The *low need support* group reported significantly lower scores than all other groups on all three measures. The *high need support* group reported significantly higher scores from all other groups on need satisfaction, but did not differ significantly from Group 3 and 4 on efficacy, nor Group 2 and 4 on student academic engagement; though this group still reported the highest mean scores for these dimensions. Taken together, the findings fall in line with results from other SDT research across domains and contexts and provide preliminary external validation that these clusters are “naturally-occurring” and may represent authentic types of home schools that exist. Further, the results suggest that even when socio-contextual need support is a mixed bag, as represented by the Groups 2, 3 and 4, positive outcomes are still indicated. Possibly, the adaptive nature of the human organism supports the individual’s quest for need satisfaction from other available sources within the environment or over-compensation with those needs which are nurtured. It appears to be far more problematic when the satisfaction of all three needs is thwarted.

RQ2: What teaching strategies characterize the types of home schools found in answering the first research question?

As expected the *high need support* group reported the highest frequency of use for the teaching strategies associated with support for autonomy and competence, and the lowest for those associated with control. While the *low need support* group reported the

highest frequency of use for the strategies associated with control, and a significantly lower frequency of use than all other groups for those associated with support for competence. This group did not, however, differ from the *mixed needs* groups on support for autonomous motivation. This group was also the most likely to report a student who was functioning independently (i.e., self-monitoring and self-motivating). In general, the *mixed need support* groups did not differ significantly from each other on use of strategies, and frequently did not differ from the *high* or *low need support* groups.

In answering question 2, clear differences were detected between Group 1 and Group 5 which theoretically are associated with high- and low-need support. But how the *mixed need support* groups may differ from each other in terms of teaching strategies is an unclear picture in these data which requires further investigation. Finally, these findings must be interpreted with caution as the meaning parents may attach to particular strategies or the ways in which they are explained or implemented likely have significant variation. The same practice may be applied in an autonomy-supportive manner or in a controlling one.

RQ3: What family-level, parent-level and student-level factors are associated with the types of home schools found in answering the first research question?

There were fewer differences that emerged among the groups in answering this question than I anticipated. For instance, the groups did not differ in terms of household income, education levels, number of years homeschooling, number of children, holding a teaching certificate or having a special needs child. This is likely due to the overall similarities this sample shared in common; i.e., highly educated, well-off, large families. Group 1

reported significantly less religious activity and more liberal political views than Groups 2 and 4, but with small effect. Group 5 reported working more hours concurrent with homeschooling than all other groups and was significantly more likely to be male. In fact, 58% of the males ($N = 29$) in this study were in Group 5. A subsequent t-test for need satisfaction and efficacy for homeschooling on the basis of gender showed females overall reported significantly higher scores on both these measures, with a large effect size.

This is perhaps the most interesting finding in answering question three. 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 over-represented 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). Perhaps because of their minority status within this population, they may feel marginalized and may encounter obstacles to integration and support within the homeschool community.

The Utility of Self-Determination Theory

The final goal of this study was to extend self-determination theory to this important emerging learning context; one, seemingly, suited for examining some of the assumptions SDT researchers may not be able to test in more conventional settings. The first order, though, was to consider SDT as a meaningful frame for investigating the

home school population. I believe it is, but measures need to be adapted to accommodate the qualitative differences that exist between a home school context and a conventional setting. For instance, administering the PIS unaltered may give unreliable results: parents may endorse a teacher's more controlling response as a solution to a problem in a school setting because of the constraints they believe may exist, but it does not necessarily follow that they then endorse the same controlling approach at home where they have fewer restrictions. Aside from this caveat, 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 me for giving them this opportunity to talk about their teaching practices and experiences; and no small number asked 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 home schools and distinguishing meaningful differences among them. The basic concerns and interests of SDT are shared and valued by many home school parents, and SDT's optimal outcome—autonomous motivation—is certainly a desired result to which many home school parents aspire. Conversely, 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.

Implications

There are several implications of these results to future research, theory and practice. First, this study provides a preliminary, empirically-examined, rich description of prevalent teaching practices and motivational climates found in a large sample of experienced home school parents—as such, it contributes to the scholarly interest in and a growing body of more rigorous, systematic research into homeschooling. Much fundamental groundwork yet remains to be done before homeschool research can converge around theoretical frames and the essential questions of educational psychology or the motivational sciences. But, minimally, this study may provide direction for recruiting participation from this population and designing studies homeschool parents find meaningful. (It is important to note I did not ask parents to report any test scores or grades which might discourage participation or signal research intentions the home school population may not endorse.)

It is also interesting to note the distribution of the types of home schools found; i.e., 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 that parents who persist in homeschooling are those who experience high need satisfaction and desired outcomes in their children; those who don't, quit (and are therefore under-represented 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 that homeschooling is a more efficacious context for learning. Rather it may help to explain why those who persist in homeschooling do 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.

Future research is needed to extend the validity of the types of home schools found in this sample before generalizations can be made. Clusters found here must be replicated in other samples of the homeschool population before we can assume these types are representative of the types of motivational climates that naturally occur among this population. More importantly, researchers must study the children who learn in these types of home schools and examine how they experience these motivational climates, as well as examine additional learning outcomes, using cross-validating methods (e.g., student reports, outside examiners, case studies etc.).

As to theory, I selected self-determination theory as a frame for my study because I believed its central tenets would be more meaningful to this population than other prevalent learning theories which are more bounded to a classroom setting. So the main contribution is in extending SDT to this domain. The findings here may contribute to the advancement of self-determination theory as well. First, the teaching practices survey included strategies SDT theorists have recommended but not empirically confirmed in an authentic context as promoting autonomous motivation—in particular, the presence of choicefulness, opportunity for students to pursue their own interests, access to frequent

feedback, interaction and support, and giving a rationale for engaging in studies; coupled with the infrequent use of deadlines, testing, negative feedback and surveillance etc. Here, parents endorsed this combination of pedagogical strategies and reported using them frequently. They were associated most strongly with the *high need support* group and higher levels of student engagement. Secondly, a home school context presents an optimal opportunity for a purely autonomy-supportive learning environment to emerge and for autonomously-motivated students to thrive. Tentatively, the results of this study suggest experienced, efficacious homeschool parents are making the most of this opportunity and, as theory would predict, they perceive their children as autonomously-motivated to learn. These results lend credence to SDT claim that the need for autonomy, competence and relatedness are innate and the human organism has a primary propensity to seek need satisfaction. The vast majority of the parents in this study have not been professionally trained nor taught to construct these types of learning environments. Yet they report experiencing high need satisfaction within the context of their homeschool experience concurrent with using strategies theory would predict promote need satisfaction in their children. Further they perceive those children homeschooled longer and at higher grade levels as demonstrating higher levels of academic engagement. The relationships among this dynamic must be empirically tested, but these findings point in a promising direction which has implications beyond this population for the advancement of SDT theoretically. Finally self-determination theory may provide insights into the rise of homeschooling, its changing demographics and the blended learning contexts that are emerging. In considering the motivations parents in this sample provided, the quest for need satisfaction may be an underlying psychological process contributing to this cultural

phenomenon's proliferation; especially in contrast with the restrictive learning contexts high-stakes testing and NCLB initiatives have produced. While pioneers of this movement may have sought the least restrictive environment possible in their own desire for autonomous need satisfaction, the growing organization and partnerships among homeschoolers and more conventional educational institution; e.g., private schools, online organizations, educational associations etc. may be a quest for the satisfaction of the need for relatedness and competence.

Practically, the results of this study should be of interest to home school parents. It affirms much of what many say they are doing, and points to practical strategies which may improve their own enjoyment of homeschooling as well as aid their efforts in achieving desired learning outcomes for their children. It may bring them some outside validation and affirmation – reportedly, a rare commodity within their experience. Additionally, I hope it contributes to the trust-building that is necessary between this population and the research community if scientific understanding is to advance. The study may demonstrate the value of systematic research to home school parents, and the benefits both groups—researchers and teaching parents—may enjoy in a shared collaboration. Finally, as a practitioner among this group, a practical application for me is a new awareness of the growing representation of homeschooling fathers and the possibility that they are more vulnerable to low need support and external forces; such as, the necessity to work concurrent with homeschooling which may be detrimental to their success. There are practical efforts the community-at-large can take to provide a more need supportive environment for this population.

Limitations

There are limitations to this study which must be taken into account in interpreting these findings. First, all measures were the same type: parental self-report assessments which may boost the observed strength of the relationships among variables from shared method variance. This limitation was accepted in lieu of gaining a large sample size. In the future, such problems can be avoided by triangulating parent reports with student assessments; and outside observers such as other homeschool parents (perhaps co-op teachers) who have contact with the family or child of interest. Secondly, the sample was cross-sectional in nature. Longitudinal research would provide better validation of these findings and insight into the underlying psychological processes which contribute to the presence of particular types of home schools. Thirdly, this is not a representative sampling frame. As with much social science research, it is a convenience sample. It is very likely only parents who feel efficacious about homeschooling and endorse its effects elected to participate. I anticipated this response and designed a study that took advantage of the scientific understanding that might be extracted from such a group. The only way to gain a representative sample of the homeschool population is to constrain them to participate (perhaps through state regulations), but this introduces an external control that undermines the natural experiment most home schools represent—which is the more valuable phenomenon for scientific investigation. The alternative way to approximate findings that can be generalized is for the proliferation of scientific research among the homeschool population, and for that research to be meaningful to the homeschool community. Then, broader representation will appear over time. Finally, the qualitative responses to the question about motivations for homeschooling were not

interpretable variables for examining differences among groups. More than 50% of the participants in Group 5 did not answer the question—whereas all other groups had <5% missing data. A further confound was allowing parents to write at length any reasons they held for homeschooling. This led to multiple responses for many participants which obscured differences among groups along the dimensions of primary reason(s) for homeschooling. In future research, I will use the 10 reasons mined from these data as forced selections and ask parents to rank the few that matter most in order of importance.

Next Steps

My future research agenda includes further work on the teaching practices survey. I'd like to develop this into a protocol for qualitative investigators of types of home schools. I expect to continue looking at home schools through a self-determination theory lens and to use the constructs of autonomy support, mastery goal structure and positive and negative conditional regard as constituting variables for developing rich descriptions from case studies extracted from the types of home schools found in this sample. Once I have protocols developed for classifying types of home schools, I am interested in examining the students who learn in these diverse settings. I'm particularly interested in looking at the quality of motivation and academic engagement in home schooled students through the teen years and during the transition to a college setting or the broader culture.

Summary

Data were collected from a large sample of experienced, highly-committed home school parents and submitted to a cluster analysis along the dimensions of support for

autonomy, competence and relatedness. From this, a five cluster solution emerged in which the largest cluster represented parents who had constructed learning environments associated with high need support and the promotion of autonomous motivation in the child they had homeschooled the longest. Three clusters emerged which, taken together, represented mixed support for basic needs of autonomy, relatedness and competence; but who still reported relatively high student academic engagement. The smallest cluster, representing slightly more than 10% of the sample, reported a low need supportive environment which correlated with lower levels of academic engagement for the child of interest. Parents represented by this cluster also reported significantly lower levels of need satisfaction and efficacy for homeschooling than parents represented by all other clusters. Less religious activity and left-leaning political views were associated with the high need support group; being a male teaching parent was significantly associated with the low need support group. In general, the *high need* and *mixed need support* groups were associated with higher student engagement, need satisfaction, efficacy for homeschooling and frequent use of teaching strategies that support autonomous motivation and competence. The *low need support* group 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.

The results of this study are important for the following reasons: 1) they provide a systematic description of the teaching practices which characterize a home school sample of experienced, highly committed parents; 2) they provide a systematic examination of meaningful, within group differences which may exist within a large homeschool sample;

3) they indicate the types of home schools more strongly associated with autonomy-support are also more strongly associated with higher levels of student academic engagement; 4) they indicate parents perceive higher levels of student academic engagement in the students they have homeschooled longer and/or at higher grade levels; 5) they suggest external pressures such as low need satisfaction; or conflicting needs such as the necessity of work concurrent with homeschooling correlate with a controlling type of home school and lower levels of student academic engagement; 6) they contribute evidence to the main tenets of self-determination theory which are relatively difficult to validate in a conventional setting—highly autonomy-supportive learning environments promote the development of autonomous motivation in children; and 7) they contribute to the validity of the teaching practices self-determination theorists predict promote or forestall the development of autonomous motivation

WORKS CITED

- Bad news for white supremacists: home-schooled Blacks do just as well as home-schooled Whites on standardized tests, (2000). *The Journal of Blacks in Higher Education*, 28, 53–54.
- Aldenderfer, M. & Blashfield, R. (1984). *Cluster analysis*. Beverly Hills, CA: Sage.
- Apple, M. (2001). *Educating the right way: Markets, standards, God, and inequality*. New York, NY: Routledge Falmer.
- Apple, M. (2005). Away with all teachers: the cultural politics of homeschooling. In B.S. Cooper (Ed.), *Homeschooling in full view: A reader* (pp. 75–95). Greenwich, CT: Information Age.
- Apple, M. (2007). Who needs teacher education? Gender, technology and the work of home schooling, *Teacher Education Quarterly*, 34(2), 111–30.
- Apostoleris, N. (2000). Children’s love of learning: home schooling and intrinsic motivation for learning. (Unpublished doctoral dissertation). Clark University: MA.
- Assor, A., Roth, G., & Deci, E. L. (2004). The emotional costs of perceived parental conditional regard: A self-determination theory analysis. *Journal of Personality*, 72, 47–87.
- Belfield, C. (2004). *Home-schooling in the U.S.* Occasional Paper No. 88. Teachers College, Columbia University: National Center for the Privatization in Education. Retrieved August 2, 2010 from <http://www.ncspe.org/readrel.php?set=pub&cat=90>
- Belmont, M., Skinner, E., Wellborn, J., & Connell, J. (1988). *Teacher as social context: A measure of student perceptions of teacher provision of involvement, structure and autonomy support* (Tech. Rep. No. 102). Rochester, NY: University of Rochester.

- Benware, C.A. & Deci, E.L. (1984). Quality of learning with an active versus massive motivational set. *American Educational Research Journal*, 21, 755–65.
- Bergman, L. R. (1998). A pattern-oriented approach to studying individual development: Snapshots and processes. In R. B. Cairns, L. R. Bergman, & J. Kagan (Eds.), *Methods and models for studying the individual* (pp. 83–122). Thousand Oaks, CA: Sage.
- Bergman, L. R., & Trost, K. (2006). The person-oriented versus the variable-oriented approach: Are they complementary, opposites, or exploring different worlds? *Merrill-Palmer Quarterly*, 52, 601-632.
- Bielick, S., Chandler, K., & Brougham, S. (2001). *Homeschooling in the United States: 1999* (NCES 2001-033). Washington, DC: U.S. Department of Education.
- Belfield, C. (2002). *The characteristics of homeschoolers who take the SAT* (Occasional Paper No. 62). New York: National Center for the Study of Privatization in Education, Teachers College, Columbia University.
- Bielick, S. (2008, December). *1.5 million homeschooled students in the United States in 2007*. Washington, DC: U.S. Department of Education (National Center for Education Statistics). Retrieved Oct 16, 2010 from <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2009030>.
- Breckenridge, J. N. (2000). Validating cluster analysis: Consistent replication and symmetry. *Multivariate Behavioral Research*, 35, 261–285.
- Brophy, J.E. (1985). Teacher-student interaction. In J.B. Dusek (Ed.), *Teacher expectations*, (pp. 303-328). Hillsdale, NJ: Erlbaum.
- Brophy, J.E. (2004). *Motivating students to learn* (2nd ed.), Mahwah, NJ: Lawrence 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.
- Chatmon, C. (2006). Exploring gender disparity in college aptitude among Christian college students from three school settings. (Unpublished doctoral dissertation). Regent University:VA.
- Christiansen, C., Horn, M. & Johnson, C. (2008). *Disrupting class: How disruptive innovation will change the way the world learns*. New York: McGraw-Hill.
- Coleman, R. E. (2010). Ideologues: pedagogues, pragmatics: A case study of the homeschool community in Delaware County, Indiana. (Unpublished master's thesis). Ball State:IN.
- Connell, J., Halpern-Felsher, B., Clifford, E., Crichlow, W., & Usinger, P. (1995). Hanging in there: Behavioral, psychological, and contextual factors affecting whether African-American adolescents stay in high school. *Journal of Adolescent Research*, 10, 41–63.
- Deci, E.L. (1975). *Intrinsic motivation*. New York: Plenum.
- Deci, E. L. & Cascio, W.F. (1972, April). *Changes in intrinsic motivation as a function of negative feedback and threats*. Presented at the meeting of the Eastern Psychological Association, Boston:MA.
- Deci, E.L. & Nezlek, J. & Sheinman, L. (1981). An instrument to assess adults' orientation toward control versus autonomy with children: Reflections on intrinsic motivation and perceived competence. *Journal of Educational Psychology*, 73, 642–650.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: 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.
- Deci, E.L & Ryan, R.M. (2008). Self-determination theory: A macrotheory of human motivation, development and health. *Canadian Psychology*, 49 (3), 182–185.
- 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., Spiegel, N., Ryan, R. M., Koestner, R., & Kauffman, M. (1982). Effects of performance standards on teaching styles: Behavior of controlling teachers. *Journal of Educational Psychology*, 74, 852–859.
- Deci, E., Vallerand, R., Pelletier, L., & Ryan, R.M. (1991). Motivation and education: the self-determination perspective. *Educational Psychologist*, 26 (3&4), 325–346.
- Delahooke, M. (1986). Home educated children's social/emotional adjustment and academic achievement: A comparative study. California School of Professional Psychology:CA.
- DeVoe, J.F., Katharin, P., Phillip, K., Ruddy, S.A., Miller, A. K., Planty, M., et al. (2003). *Indicators of school crime and safety* (6th ed.). Washington, D.C.: U.S. Dept. of Education, National Center for Education Statistics.
- Duffey, J. (2002). Home schooling children with special needs. *Journal of Special Education Leadership*, 15(1), 25–32.

- Duvall, S., Delquadri, J., Ward, D. & Greenwood, C.R. (1997). An exploratory study of homeschool instructional environments and their effects on the basic skills of students with learning disabilities. *Education and Treatment of Children, 20*, 150–172.
- Duvall, S., Delquadri, J., & Ward, D. (2004). A preliminary investigation of the effectiveness of homeschool instructional environment for students with attention- deficit/hyperactivity disorder. *School Psychology Review, 33*(1), 140–158.
- Eccles, J. (1993). School and family effects on the ontogeny of children's interests, self-perceptions, and activity choice. In J. Jacobs (Ed.), *Nebraska Symposium on Motivation: Vol. 40, Developmental perspectives on motivation* (pp.145–208). Lincoln: University of Nebraska Press.
- Eccles, J., & Roeser, R. (2009). Schools, academic motivation, and stage-environment fit. *Handbook of adolescent psychology, Vol 1: Individual bases of adolescent development (3rd ed.)*, 404–434. Hoboken, NJ US: John Wiley & Sons Inc.
- 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: Routledge.
- Eccles, J., Wigfield, A. & Schiefele, U. (1998). Motivation to succeed. In Eisenberg N. (Ed.) *Handbook of Child Psychology, 5th ed.: Vol.3*, 1017–95.
- Eccles-Parsons, J., Adler T., Futterman, R., Goff, S. Kaczala, C., Meece, J., et al..(1983). Expectancies, values, and academic behaviors. In J.T. Spence (Ed.), *Achievement and achievement motivation* (pp.75–146). San Francisco: Freeman.

- Fabrigar, L.R., Wegener, D.T., MacCallum, R.C., & Strahan, E.J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods, 4*(3), 272-299.
- Fan, X. & Chen, M. (2001). Parental involvement and students' academic achievement: A meta-analysis. *Educational Psychology Review, 13*(1), 1-22.
- Farenga, P. (1999). John Holt and the origins of contemporary homeschooling. *Paths of Learning, 1*, (1), 4.
- Fields-Smith, C. & Williams, M. (2009). Motivations, sacrifices, and challenges: Black parents' decisions to home school. *Urban Review, 41*(4), 369-389.
- Flink, C., Boggiano, A., & Barrett, M. (1990). Controlling teaching strategies: Undermining children's self-determination and performance. *Journal of Personality and Social Psychology, 59*, 916-924.
- Fordham, S. & Ogbu, J. (1986). Black students' school success: Coping with the burden of 'acting White.' *Urban Review, 18*, 176-206.
- Fredricks, J.A., Blumenfeld, P.C., Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research, 74*(1), 59-109.
- Frodi, A., Bridges, L., & Grolnick, W. (1985). Correlates of mastery-related behavior: A short term longitudinal study of infants in their second year. *Child Development, 56*, 1291-1298.
- Gagné, M. (2003). The role of autonomy support and autonomy orientation in prosocial behavior engagement. *Motivation and Emotion, 27*, 199-223.
- Gaither, M. (2008). *Homeschool: An American history*. New York: Palgrave Macmillan.
- Gaither, M. (2009a). Homeschooling goes mainstream. *Education Next, 9*(1), 10-19.

- Gaither, M. (2009b). Homeschooling in the USA: Past, present and future. *Theory and Research in Education*, 7(3), 331–346.
- Gatto, J. (2003). Against school. *Harper's Magazine*, Sept. 2003, 33-38.
- Ginsburg, G. & Bronstein, P. (1993). Family factors related to children's intrinsic/extrinsic motivational orientation and academic performance. *Child Development*, 64 (5), 1461–1474.
- Glaser, B.G. & Strauss, A.L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. New York: Aldine.
- 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.
- Gower, J.C. (1967). A comparison of some methods of cluster analysis. *Biometrics*, 23, 623-637.
- Green, C. L. & Hoover-Dempsey, K.V. (2007). Why do parents homeschool? A systematic examination of parental involvement. *Education & Urban Society* 39 (2), 264–85.
- 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: 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.
- Grolnick, W.S., Ryan, R. M., & Deci E.L. (1991). Inner resources for school achievement: Motivational mediators of children's perceptions of their parents. *Journal of Educational Psychology, 83*, 508–17.
- Guay, F., Boggiano, A. K., & Vallerand, R. J. (2001). Autonomy support, intrinsic motivation, and perceived competence: conceptual and empirical linkages. *Personality and Social Psychology Bulletin, 27*, 643–650.
- 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: Macmillan.
- Harter, S. (1981). A new self-report scale of intrinsic versus extrinsic orientation in the classroom: Motivational and informational components. *Developmental Psychology, 17* (3), 300–312.
- Henderson, S. (2005). The ABC's of homeschooling: African-Americans join the circle of parents who choose to teach their children at home. *Ebony*, December, 2005, 104–108.
- Hidi, S., & Harackiewicz, J. (2000). Motivating the academically unmotivated: A critical issue for the 21st century. *Review of Educational Research, 70*, 150–180.
- Hill, P. (2000). Home schooling and the future of public education. *Peabody Journal of Education, 75* (1&2), 20–31.

- Holinga, K.R. (1999). The cycle of transformation in home school families over time. (Unpublished doctoral dissertation). Ohio State University: OH.
- Holt, J. (1982). *Teach your own: A hopeful path for education*. New York: Delta/Seymour Lawrence.
- Home School Legal Defense Association. (2001, Oct 2). Homeschooling expands around the globe. *HSLDA News*. Retrieved 12/2/2009 from <http://www.hslda.org/hs/international/200110020.asp>.
- Hoy, W. K. & Woolfolk, A. E. (1990). Socialization of student teachers. *American Educational Research Journal*, 27, 279–300.
- Isenberg, E. (2007). What have we learned about homeschooling? *Peabody Journal of Education*, 82(2-3), 387–409.
- Jones, Paul, and Gene Gloeckner. (2004). A study of admission officers' perceptions of and attitudes toward homeschool students. *Journal of College Admission*, 85,12.
- Kaplan, A. (2008). Achievement motivation. In E. Anderman & L.H. Anderman (Eds.), *Psychology of Classroom Learning: An Encyclopedia*. Detroit, MI: Macmillan Reference.
- Kaplan, A., Gheen, M., & Midgley, C. (2002). Classroom goal structure and student disruptive behaviour. *British Journal of Educational Psychology*, 72, 191–211.
- Kaplan, A., & Maehr, M. L. (1999). Achievement goals and student well-being. *Contemporary Educational Psychology*, 24, 330–358.
- Kaplan, A. & Maehr M. (2007). The contributions and prospects of goal orientation theory. *Educational Psychological Review*, 19, 141–184.
- Katz, I., & Assor, A. (2007). When choice motivates and when it does not. *Educational Psychology Review*, 19, 429–442.

- Klugewicz, S.L. & Carraccio, C.L. (1999). Home schooled children: A pediatric perspective. *Clinical Pediatrics*, 38, 407–411.
- Knowles, J. G., Mayberry, M., & Ray, B. D. (1991, December 24). *An assessment of home schools in Nevada, Oregon, Utah, and Washington: Implications for public education and a vehicle for informed policy decision, summary report* (Field Initiated Research Project Grant No.R117E90220). Washington, DC: U.S. Department of Education.
- Knowles, J.G. (1991). 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, April 3–7.
- Knowles, J. G., Marlow, S.E., and Muchmore, J.A. (1992). From pedagogy to ideology: Origins and phases of home education in the United States, 1970–1990. *American Journal of Education*, 100 (2), 195–235.
- Knowles, J.G. and Muchmore, J.A. (1995) Yep! We're grown up home schooled kids _ and we're doing just fine, thank you very much. *Journal of Research on Christian Education* 4 (1), 35–56.
- Koestner, R. Ryan, R.M., Bernieri, F. & Holt, K. (1984). Setting limits on children's behavior: The differential effects of controlling versus informational styles on intrinsic motivation and creativity. *Journal of Personality* 52: 233–48.
- Kunzman, R. (2005). Homeschooling in Indiana: A closer look. *Education Policy Brief*, 3(7), 1–8. Bloomington, IN: Center for Evaluation & Education Policy, Indiana University.
- Kunzman, R. (2009). *Write these laws on your children: Inside the world of conservative Christian homeschooling*. Boston: Beacon Press.

- Kunzman, R. (2010, Aug). Homeschool research and scholarship. Retrieved from Indiana University School of Education, Homeschool Research and Scholarship website home page. <http://www.indiana.edu/~homeeduc/index.html>.
- Lange, C., & Liu, K. (1999). *Homeschooling: Parents' reasons for transfer and the implications for educational policy*. Research report # 29. Minneapolis, MN: National Center on Educational Outcomes.
- Lepper, M., Corpus, J., Iyengar, S. (2005). Intrinsic and extrinsic motivational orientations in the classroom: Age differences and academic correlates. *Journal of Educational Psychology, 97*(2), 184–196.
- Levin, H. & Belfield, C.R. (2003). The marketplace in education. In R.E. Floden (Ed.), *Review of research in education* (pp. 183–219). Washington, D.C.: AERA.
- Lines, P. M. (1987). An overview of home instruction. *Phi Delta Kappan, 68* (7), 510–17.
- Lines, P. (1991). Home instruction: The size and growth of the movement." In J. Van Galen and M.A. Pitman (Eds.), *Home Schooling: Political, Historical, and Pedagogical Perspectives*, (pp. 9-41). Norwood, NJ: Ablex.
- Lines, P. M. (2000). Homeschooling comes of age. *Public Interest, 140*,74.
- Lines, P. M. (2001). Homeschooling. *ERIC Digests*.
- Lubienski, C. (2000). Whither the common good? A critique of home schooling. *Peabody Journal of Education, 75*(1/2), 207–232.
- Maehr, M.L., & Midgley, C. (1996). *Transforming school cultures to enhance student motivation and learning*. Boulder, CO: Westview Press.
- Marjoribanks, K. (2002). *Family and school capital: Towards a context theory of students' school outcomes*. Dordrecht, the Netherlands: Kluwer Academic.

- Mayberry, M. and Knowles, J.G. (1989). Family unity objectives of parents who teach their children: ideological and pedagogical orientations to home school. *The Urban Review*, 21, 209–25.
- Mayberry, M., Knowles, G., Ray, B. & Marlow, S. (1995). *Home schooling: Parents as educators*. Thousand Oaks, Calif.: Corwin Press.
- 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: Routledge.
- Medlin, R.G. (2000). Home schooling and the question of socialization. *Peabody Journal of Education*, 75(1&2): 107–23.
- Merry, M. & Howell, C. (2009). Can intimacy justify home education? *Theory and Research in Education*, 7(3): 363–381.
- Midgley, C., Kaplan, A., Middleton, M., Maehr, M., Urdan, T., Hicks Anderman, L., Anderman, E. & Roeser, R. (1998). The development and validation of scales assessing students' achievement goal orientations. *Contemporary Educational Psychology*, 23, 113–131.
- 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.
- Murray, B. (1996). Home schools: How do they affect children? *APA Monitor*, 7.
- Nansel, T.R., Overpeck, M., Pilla, R.S., Raun, W. J., Simons-Morton, B., & Scheidt, P. (2001). Bullying behaviors among U.S. youth: Prevalence and association with psychosocial adjustment. *Journal of the American Medical Association*, 285, 1094–2100.

- NEA Handbook (2009-2010). *B-81 Homeschooling*. Retrieved 8/2/2010 from <http://www.nea.org/assets/docs/nea-handbook-resolutions.pdf>
- Nemer, K. (2002). *Understudied education: Toward building a homeschooling research agenda*. Teachers College, Columbia: National Center for the Study of Privatization in Education.
- Neuman, A. (2004) Home schooling as a fundamental change in lifestyle. *Evaluation and Research in Education* 17 (2&3), 132–143.
- 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.
- Ogbu, J. (1985). Cultural ecology of competence among inner-city Blacks. In H. McAdoo & J. McAdoo (Eds.), *Black children social, educational, and parental environments* (pp.45-56). Newbury Park, CA: Sage.
- Olweus, D. (1993). Victimization by peers: Antecedents and long-term outcomes. In K. H. Rubin & J. B. Assendorpf (Eds.), *Social withdrawal, inhibition, and shyness in childhood* (pp. 315–341). Hillsdale, NJ: Erlbaum.
- Peterson, A. J. (1997). The perspective of the American Psychological Association on home schooling: Psychologists are wary of schooling children at home. *Home School Court Report*, 13(2), 3.
- Pintrich, P.R. (2003). A motivational science perspective on the role of student motivation in learning and teaching contexts. *Journal of Educational Psychology*, 95(4), 667–686.
- Pintrich, P.R. & Schunk, D. H. (2002). *Motivation in education: Theory, research, and application* (2nd ed.). Englewood Cliffs, NJ: Merrill-Prentice-Hall.

- Pintrich, P. R., Smith, D., Garcia, T., & McKeachie, W. (1991). *A manual for the use of the Motivated Strategies for Learning Questionnaire* (Tech. Rep. No. 91-B-004). Ann Arbor: Regents of the University of Michigan.
- 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>.
- Planty, M., Hassar, W., Snyder, T., Kena, G., Kewal Ramani, A., Kemp, J., Bianco, K., Dinkes, R. (2009b). *The conditions of education 2009* (NCES 2009-081). Washington, D.C.: National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education.
- Princiotta, D. and Bielick, S. (2006). *Homeschooling in the United States: 2003*, (NCES 2006-042) U.S. Department of Education. National Center for Education Statistics, Washington, DC: 2005.
- Ratelle, C., Guay, F., Vallerand, R., Larose, S., & Senécal, C. (2007). Autonomous, controlled, and amotivated types of academic motivation: A person-oriented analysis. *Journal of Educational Psychology*, 99(4), 734–746.
- Ray, B. D. (1988). Home schools: A synthesis of research on characteristics and learner outcomes. *Education and Urban Society*, 21 (1), 16-31.
- Ray, B. (1997). *Strengths of their own: Homeschoolers across America*, National Home Education Research Institute, Salem, OR.
- Ray, B. (2002). Customization through homeschooling. *Educational Leadership* 59 (7), 50–54.

- Ray, B. (2004). *The worldwide guide to homeschooling*. Nashville: Broadman & Holman.
- Ray, Brian. (2005). A homeschool research story. In B.S. Cooper (Ed.), *Home schooling in full view: A reader* (pp. 1–19). Greenwich, CT: Information Age.
- Ray, B. D. (2009, August 10). Research facts on homeschooling. Retrieved Oct 16, 2010 from <http://www.nheri.org/Research-Facts-on-Homeschooling.html>.
- Ray, B.D. (2010). Academic achievement and demographic traits of homeschooled students: A nationwide study. *Academic Leadership: The Online Journal*, 8 (3). Retrieved Oct 29, 2010 from http://www.academicleadership.org/emprical_research/Academic_Achievement_and_Demographic_Traits_of_Homeschool_Students_A_Nationwide_Study.shtml
- Ray, B.D. & Wartes, J. (1991). The academic achievement and affective development of homeschooled children. In J. Van Galen and M.A. Pitman (Eds.) *Home schooling: political, historical, and pedagogical perspectives* (pp. 43–62). Norwood, NJ: Ablex.
- Reeve, J. (1998). Autonomy support as an interpersonal motivating style: Is it teachable? *Contemporary Educational Psychology*, 23, 312–330.
- 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., 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.
- Reich, R. (2001). The civic perils of homeschooling. *Educational Leadership*, 57 (7), 56–59.

- Reich, R. (2005). Why home schooling should be regulated. In B.S. Cooper (Ed.), *Home schooling in full view: A reader* (pp. 109-120). Greenwich, CT: Information Age.
- Reitman, D., Rhode, P., Hupp, S., & Altobello, C. (2002). Development and validation of the Parental Authority Questionnaire - Revised. *Journal of Psychopathology and Behavioral Assessment*, 24(2), 119–127.
- Roeser, R.W. & Eccles, J.S., (2000). Schooling and mental health. In A. J. Sameroff, M. Lewis, & S.M. Miller (Eds.), *Handbook of developmental psychopathology* (2nd ed.) (pp. 135-156). New York: Plenum.
- Roeser, R. W., Midgley, C., & Urdan, T. C. (1996). Perceptions of the school psychological environment and early adolescents' psychological and behavioral functioning in school: The mediating role of goals and belonging. *Journal of Educational Psychology*, 88, 408–422.
- Romm, T. (1993). *Home schooling and the transmission of civic culture*. (Unpublished doctoral dissertation). Clark Atlanta University: Atlanta, GA.
- Rose, L.C. & Gallup, A. M. (2001). *33rd poll of the public's attitudes toward the public schools*. Retrieved 8/2/2010 from www.pdkintl.org/kappan/kimages/kpoll83.pdf
- Rothermel, P. (2003). Can we classify motives for home education? *Evaluation & Research in Education* 17, (2/3), 74–89.
- Rudner, L. M. (1999). Scholastic achievement and demographic characteristics of home school students in 1998. *Education Policy Analysis Archives*, 7, (8).
- Ryan, R. M., & Connell, J.P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology*, 57, 749–761.

- Ryan, R. M., Connel, J.P., & Grolnick, W. S. (1992). When achievement is not intrinsically motivated: A theory of self-regulation in school. In A. K. Boggiano & T.S.Pittman (Eds.). *Achievement and motivation: A social-developmental perspective* (pp. 167-188). New York: Cambridge University Press.
- Ryan, R. M., & Deci, E. L. (2000a). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, 25, (2), 54–67.
- Ryan, R. M., & Deci, E.L. (2000b). 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 Deci, E.L & Ryan, R.M.(Eds) *Handbook of Self Determination Research* (pp.3-33). Rochester, NY: University of Rochester Press.
- Ryan, R.M. & LaGuardia (2000). What is being optimized over development? A self-determination theory perspective on basic psychological needs. In S. Qualls & R. Abeles (Eds.), *Psychology and the aging revolution: How we adapt to longer life*, (pp. 145–172). Washington, D.C.: American Psychological Association.
- 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.
- Schneider, B. & Coleman, J.S. (1993). *Parents, their children, and schools*. Boulder, CO: Westview Press.
- 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.

- Soenens, B., & Vansteenkiste, M. (2005). Antecedents and outcomes of self-determination in three life-domains: The role of parents' and teachers' autonomy support. *Journal of Youth and Adolescence*, 34, 589–604.
- Spiegler, T. (2004) Home education in Germany: An overview of the contemporary situation. *Evaluation and Research in Education* 17 (2&3), 179–190.
- Shyers, L.E. (1992). A comparison of social adjustment between home and traditionally schooled students. *Home School Researcher*, 8, 1–8.
- Sierens, E., Vansteenkiste, M., Goossens, L., Soenens, B. & Dochy, F. (2009). The synergistic relationship of perceived autonomy support and structure in the prediction of self-regulated learning. *British Journal of Educational Psychology*, 79, 57–68.
- Smith, J. M. (2003). No child left untested? *The Home School Court Report*, 19 (2). Retrieved 10/13/2010 from <http://www.hslda.org/courtreport/v19n2/v19n209.asp>.
- Stevens, M. L. (2001). *Kingdom of children: Culture and controversy in the homeschooling movement*. Princeton Studies in Cultural Sociology;. Princeton, NJ: Princeton University Press.
- Stevens, M. L. (2003). The normalisation of homeschooling in the USA." *Evaluation & Research in Education* 17, (2/3): 90–100.
- Stockard, J. & Mayberry, M. (1992). *Effective educational environments*. Newbury Park, CA: Corwin Press.
- Tabachnick, B. G., & Fidell, L. (2007). *Using multivariate statistics*. 5th edition. Boston, MA: Allyn & Bacon.
- Tan, P. N., Steinbach, M., & Kumar, V. (2006). *Introduction to data mining*. Boston, MA: Addison-Wesley.

- Tesch, R. (1990). *Qualitative Research: Analysis Types & Software Tools*. Bristol, PA: Falmer.
- Urduan, T.C. (2004). Predictors of academic self-handicapping and achievement: Examining achievement goals, classroom goal structures, and culture. *Journal of Educational Psychology, 96*, 251–264.
- Vallerand, R. J. & Reid, G. (1984). On the causal effects of perceived competency on intrinsic motivation: A test of cognitive evaluation theory. *Journal of Sport Psychology, 6*, 94-102.
- Van Galen, J.A. (1987). Explaining home education: parents' accounts of their decision to teach their own children, *The Urban Review 19*: 161–77.
- Van Galen, J.A. (1988). Ideology, curriculum, and pedagogy in home education, *Education and Urban Society, 21*, 52–68.
- Van Galen, J. (1991). Ideologues and pedagogues: Parents who teach their children at home, in *Home schooling : political, historical, and pedagogical perspectives*, (Eds.) Van Galen, J. and M.A. Pitman, *Social and policy issues in education* (pp. 63-76). Norwood, NJ: Ablex.
- Vansteenkiste, M., Lens, W., & Deci, E. L. (2006). Intrinsic versus extrinsic goal-contents in self-determination theory: Another look at the quality of academic motivation. *Educational Psychology, 41*, 19–31.
- 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.
- Van Pelt, D. (2004). Home education in Canada: A report on the pan-Canadian study on home education. Medicine Hat, AB: Canadian Centre for Home Education.
- Volet, S., & Jävelä, S. (Eds.), (2001). *Motivation in learning contexts: Theoretical advances and*

- methodological implication*, (pp.33–55). Oxford, UK: Pergamon.
- Walker, J. M. T., Wilkins, A. S., Dallaire, J. P., Sandler, H. M., & Hoover-Dempsey, K. V. (2005). Parental involvement: Model revision through scale development. *Elementary School Journal*, 106, 85–104.
- Ward, J. (1963). Hierarchical grouping to optimize an objective function. *Journal of the American Statistical Association* 58: 236-244.
- Wartes, J. (1989). *Report from the 1988 Washington homeschool testing*. Woodinville, WA: Washington Homeschool Research Project. (Available from the Washington Homeschool Research Project, 16109 N.E. 169 Pl., Woodinville, WA 98072).
- 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, 187– 221). New York: Academic Press.
- Wellborn, J., Connell, J., Skinner, E.A., & Pierson, L.H. (1988). *Teacher as social context: A measure of teacher provision of involvement, structure and autonomy support*. (Tech. Rep. No. 102). Rochester, NY: University of Rochester.
- Wigfield, A., Eccles, J.S., Schiefele, U., Roeser, R., & Davis-Kean, P. (2006). Motivation. In N. Eisenberg (Ed.), *Handbook of child psychology: Vol. 3. Social, emotional, and personality development* (6th ed.), (pp. 933–1002). New York: Wiley.
- Winstanley, K. (2009). Too cool for school?: Gifted children and homeschooling. *Theory and Research in Education*, 7, 347.
- Wellborn, J., Connell, J., Skinner, E. A., & Pierson, L. H. (1988). *Teacher as social context: A measure of teacher provision of involvement, structure and autonomy support* (Tech. Rep. No. 102). Rochester, NY: University of Rochester.

Wyatt, Gary. (2008). *Family ties : Relationships, socialization, and home schooling*. Lanham, MD: University Press of America.

APPENDICES

A. Problems in School Questionnaire (adapted)

(This measure will yield a score for the parent's motivating style.)

Directions: On the following pages you will find a series of vignettes adapted for use with homeschool parents. Each one describes an incident and then lists four ways of responding to the situation. Please read each vignette and then consider each response in turn. Think about each response option in terms of how appropriate you consider it to be as a means of dealing with the problem described in the vignette. You might believe the option to be “perfect,” in other words, “extremely appropriate” in which case you would respond with the number 7. You might consider the response highly inappropriate, in which case you would respond with the number 1. If you find the option reasonable you would select some number between 1 and 7. So think about each option and rate it on the scale shown below. Please rate each of the four options for each vignette. There are ten vignettes with four options for each.

There are no right or wrong ratings on these items. People’s styles differ, and we are simply interested in what you consider appropriate given your own style.

Please respond to each of the 40 items using the following scale.

| | | | | | | |
|-----------------------|---|---|---------------------------|---|---|---------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Very inappropriate | | | Moderately appropriate | | | Very appropriate |

- A. Jim is an average student who has been working at grade level. During the past two weeks he has appeared listless and uninterested in his schoolwork. Recently he has not been completing assignments. What should Jim’s mother do?
1. She should impress upon him the importance of finishing his assignments since he needs to learn this material for his own good. (MC)
 2. Let him know that he doesn’t have to finish all of his work now and see if she can help him work out the cause of the listlessness. (HA)
 3. Make him stay inside until that day’s assignments are done. (HC)

4. Show him where he needs to be in his assignment book if he wants to finish his school year on time. (SC)
- B. Sarah has typically had low test scores and struggles with reading comprehension. But this year she has shown a lot of progress and her annual test scores now show she is on grade level in most areas. As a result of this promising report, her parents decide to:
5. Increase her allowance and promise her a ten-speed if she continues to improve. (HC)
 6. Tell her that she's now doing as well as many of the other children her age. (SC)
 7. Tell her about the report, letting her know that they have noticed her increased independence in school and around the house. (HA)
 8. Continue to emphasize that she has to work hard to get better grades. (MC)
- C. Donny loses his temper a lot and has a way of agitating his siblings at home and the other children in his co-op class. He doesn't respond well to what his mother tell him to do and she is concerned that he will not learn to get along with others. The best thing for Donny's mother to do is:
9. Emphasize how important it is for him to "control himself" in order to succeed in school and in other situations. (MC)
 10. Start using a reward chart with him to promote acceptable behavior and let him earn the puppy he wants this way. (HC)
 11. Help him see how other children behave in these various situations and praise him for doing the same. (SC)
 12. Realize that Donny is probably not getting the attention he needs and start being more responsive to him. (HA)
- D. Your son is one of the better players on his junior soccer team which has been winning most of its games. However, he is struggling in his algebra class at the co-op, and he recently failed a unit test. His tutor has offered to let him retake the exam the day after tomorrow. You decide that the best thing to do is:
13. Find some time to talk with him about how he plans to handle the situation.(HA)
 14. Tell him he probably ought to decide to forego tomorrow's game so he can study for the make-up exam. (MC)
 15. See if others in the class are in also taking the make-up and suggest he put in as much prep time as they do. (SC)

16. Make him miss tomorrow's game to study. Algebra needs to be a priority. (HC)
- E. Mr. Wilson's competitive debate team is not as strong as some of his teams in the past. What should Mr. Wilson do to help his team improve?
17. Post the records of past teams to help motivate them to work hard to improve. (SC)
18. Schedule more practice sessions and promise them a pizza party if they improve. (HC)
19. Give each team member an individual improvement plan and emphasize the importance of each member doing his/her part. (MC)
20. Help the group devise a plan together for improving the team's success. (HA)
- F. Your youngest daughter is naturally shy and was often excluded by her peers at your former co-op. She is now reluctant to make friends at the new homeschool group you have recently joined. Your wisdom would guide you to:
21. Prod her into interactions and provide her with much praise for any social initiative. (HC)
22. Talk to her about this and emphasize that she will enjoy the new group more once she makes friends with some of the other children. (MC)
23. Invite her to talk about her relations with the other kids, and encourage her to take small steps when she's ready. (HA)
24. Encourage her to observe how other children relate and to join in with them. (SC)
- G. For the past few weeks, some of Mrs. Roger's grocery money has been missing from her purse. Today Mrs. Roger's daughter found her younger brother taking money out of her dresser drawer. The best thing for Mrs. Roger's to do is:
25. Talk to him about the consequences of stealing and how it affects others. (SC)
26. Talk to him about it, expressing her confidence in him and attempt to understand why he did it. (HA)
27. Give him a good scolding; stealing is something which cannot be tolerated and he has to learn that. (HC)
28. Emphasize that it was wrong and have him apologize to his sister and promise not to do it again. (MC)

- H. Your daughter has been getting average scores on her schoolwork, and you'd like to see her improve. A useful approach might be to:
29. Find out if there is a different curriculum or approach that might interest her more. (HA)
 30. Go over the scores with her; point out where she needs to improve. (SC)
 31. Stress that she should do better; she'll never get into college with work like this. (MC)
 32. Offer her a dollar for every A and 50 cents for every B on future work. (HC)
- I. Your son does not like to express himself in writing and he complains about the writing program you used with all of his older siblings. The best thing to do to increase his motivation in this area is:
33. Show him some examples of his siblings' writing when they were his age. (SC)
 34. Offer to increase his computer time if he puts more effort into his writing. (HC)
 35. Allow him to choose different topics to write about other than those assigned in the book. (HA)
 36. Stress the importance of writing and point out all his siblings learned to write well using this curriculum. (MC)
- J. Despite high test scores, Tally puts little effort into her school work. She says that it is boring when asked and is more interested in chatting online with her friends. Even so, she is planning to apply to several selective colleges her senior year. What should Tally's parents do to help her work up to her abilities?
37. Limit her time online until her attitude towards school improves. (HC)
 38. Stress that high test scores alone will not get her into the college of her choice—high grades are also important. (SC)
 39. Enroll her in some community college classes to give her more challenge. (MC)
 40. Talk with her about this and offer to help her develop a plan to be ready to apply to her target schools. (HA)

B. Patterns of Adaptive Learning Scale (PALS) - Teacher Survey (adapted)

Directions: In answering the remaining questions of this survey, please consider *the child you have homeschooled the longest*. If you have homeschooled more than one child for the same length of time, please then consider the oldest of these children for your responses.

1. Please indicate the age of the child you have homeschooled the longest: _____
2. Please indicate the grade level of the child you have homeschooled the longest: _____
3. Please indicate the number of years this child has been homeschooled: _____
4. Please indicate the gender of the child you have homeschooled the longest: __M __F
5. How often are you required to report test scores for this child? (Include any reporting you may do to an umbrella organization, state or local agency)

(Mastery Goal Orientation Items Only)

| | | | | |
|-------------------|---|----------------|---|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Strongly disagree | | Somewhat agree | | Strongly agree |

1. In this home school: The importance of trying hard is really stressed with this child.
2. I make a special effort to recognize this child's individual progress, even where s/he may be below grade level.
3. In this home school: This student is told that making mistakes is OK as long as s/he is learning and improving.
4. During our school day, I often provide several different activities so that this child can choose among them.
5. I consider how much this child has improved when I give this child grades.
6. In this home school: A lot of work this child does is boring and repetitious.
7. In this home school: This child is frequently told that learning should be interesting
8. In this home school: The emphasis is on really understanding schoolwork, not just memorizing it.
9. I give a wide range of assignments, matched to the student's needs and skill level.
10. In this home school: A real effort is made to show this student how the work s/he does in school is related to her/his life outside of school.

C. Positive and Negative Conditional Regard Survey (adapted)

The score from this measure will be used to examine the quality of relatedness provided.

| | | | | |
|-------------------|---|----------------|---|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Strongly disagree | | Somewhat agree | | Strongly agree |

Positive conditional regard:

1. My child knows that when he does well academically I treat him/her with more appreciation and affection.

2. If (or when) my child puts in effort and gets higher grades - I'll let him feel that I feel much better in his company.

3. My child knows that when he invests more time in academics I appreciate him more.

4. I let me child feel that if he gets high scores I'll be more proud of him.

Negative conditional regard:

1. If (or when) my child does not put in effort in school work and gets a low grade - I make him feel that he should be ashamed of himself.

2. If (or when) my child does not put in effort in schoolwork - I let him feel that I'm disappointed in him.

3. If (or when) my child does not put in effort in schoolwork - I sometimes react with much anger, even at the cost of him being insulted by my reaction.

4. If (or when) my child gets bad grades for a period of time - I'll let him feel how much I'm disappointed and angry at him.

D. Homeschool Practices Survey

Directions: We would like to know what teaching practices characterize your home school program for the child you have homeschooled the longest who is still at home. Please indicate how frequently the following practices have been used since the beginning of this school year only.

Please keep only one child in mind when selecting your responses

1 = Never 2 = Once or twice 3 = Once or twice a month 4 = Once a week 5 = Several Times a Week

6 = Once a day 7 = Several times a day

1. This student uses resources designed primarily for use in conventional school.
2. This student uses resources designed primarily for use in a home school.
3. This student uses age-appropriate literature and nonfiction (i.e., books other than textbooks.)
4. This student chooses his/her books or activities.
5. This student participates in classes conducted online.
6. This student takes a test.
7. This student participates in co-op classes or other group learning.
8. This student uses a tutor or teacher other than you.
9. This student takes college classes locally (e.g., not online).
10. This student is responsible for managing his/her time.
11. This student self-checks his/her work.
12. This student takes classes at a local private or public school.
13. This student uses activities or material found online.
14. You assign academic work for the student to complete.
15. You use projects to promote learning.
16. You show the student how to answer problems or questions in the text.
17. You take student's preferences for academic work into consideration.
18. You redirect student's attention back to his/her schoolwork.
19. You ask the student to explain something he/she is learning to you.
20. You set deadlines.
21. You explain the reason for learning the material.
22. You ask this student what he/she would like to study or do
23. You encourage questions about what the student is learning.
24. You enforce deadlines.
25. You grade the student's work.
26. You talk with the student about the things he/she is learning.
27. You encourage/allow the student to pursue her/his own interests.
28. You address unacceptable student behavior.
29. You address negative attitudes.

30. You use loss of privileges as an incentive for doing work.
31. You set a schedule for the student to follow.
32. You take a field trip related to academic work.
33. You provide the student with the opportunity to work with others.
34. You point out areas of academic work that need to improve.
35. You praise the student for his/her progress.
36. You evaluate the student's work
37. You encourage the student to persist in his/her efforts
38. You use rewards as an incentive for doing work.
39. You work collaboratively with the student on a task or activity.
40. You give the student feedback on the quality of his/her work.
41. You give tests.
42. This student takes a test. (Dropped from all analyses).

E. Parent's Perception of Academic Engagement

The scores on these measures will stand in as proxy for the effects of homeschooling on both teaching parent and child of interest.

1. How interested is the student in his/her school studies: 1 = not interested, 2 = rarely interested, 3 = sometimes interested, 4 = usually interested, 5 = very interested
2. How much effort does this student put into his/her school studies: 1 = no effort, 2 = some effort, 3= satisfactory effort, 4 = above average effort, 5 = a lot of effort
3. How much enjoyment does this student derive from his/her school studies: 1 = does not enjoy, 2 = rarely enjoys 3= sometimes enjoys 4 = often enjoys, 5 = always enjoys
4. How often does this student express negative emotions related to his/her studies (e.g., anxiety, anger, frustration)? 1 = never, 2= rarely, 3 = sometimes, 4=often, 5=daily
5. How often does this student give up when he/she encounters a challenge in his/her studies? 1= never, 2= rarely, 3= sometimes, 4= often, 5= always
6. How often does this student initiate learning on his/her own? 1=never, 2=rarely, 3=sometimes, 4=often, 5=always
7. What level of challenge does this child prefer in his/her studies? 1=very easy, 2=easy, 3=neither easy nor challenging, 4=challenging, 5=very challenging
8. When you consider this student's capabilities, how would you rate the quality of this student's work: 1 = poor, 2= unsatisfactory, 3= satisfactory, 4 = very good, 5= excellent

F. Efficacy for Homeschooling Scale

Please read each of the following items carefully, thinking about how it relates to your home schooling, and then indicate how true it is for you. Use the following scale to respond:

| | | | | | | |
|-----------------|---|---|---------------|---|---|-----------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| not at all true | | | somewhat true | | | very true |

1. I feel confident in my ability to homeschool my children.

| | | | | | | |
|-----------------|---|---|---------------|---|---|-----------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| not at all true | | | somewhat true | | | very true |

2. I am capable of homeschooling my children now.

| | | | | | | |
|-----------------|---|---|---------------|---|---|-----------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| not at all true | | | somewhat true | | | very true |

3. I am able to achieve my goals for homeschooling my children.

| | | | | | | |
|-----------------|---|---|---------------|---|---|-----------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| not at all true | | | somewhat true | | | very true |

4. I feel able to meet the challenge of homeschooling my children.

| | | | | | | |
|-----------------|---|---|---------------|---|---|-----------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| not at all true | | | somewhat true | | | very true |

G. Basic Needs Satisfaction Scale

Feelings I Have

Please read each of the following items carefully, thinking about how it relates to your life, and then indicate how true it is for you. Use the following scale to respond:

| | | | | | | |
|-----------------|---|---|---------------|---|---|-----------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| not at all true | | | somewhat true | | | very true |

A= autonomy scale C = competence scale R=relatedness scale

1. I feel like I have a lot of freedom to decide how to home school my children. (A)
2. I really like the people I interact with through homeschooling. (R)
3. Often, I do not feel very competent in homeschooling. (C)
4. I feel a lot of pressure related to homeschooling. (A)
5. People who know me tell me I am good at homeschooling. (C)
6. I get along with the people I come into contact with through homeschooling.(R)
7. I pretty much keep to myself and don't have a lot of social contacts outside my home.(R)
8. I generally feel free to express my ideas and opinions about homeschooling when I'm around others.(A)
9. I consider the people I regularly interact with through homeschooling to be my friends.(R)
10. I have been able to learn interesting new skills through homeschooling.(C)
11. In homeschooling, I frequently have to do what others direct me to do.(A)
12. The people I interact with through homeschooling care about me.(R)
13. Most days I feel a sense of accomplishment from homeschooling.(C)
14. The people I interact with on a daily basis tend to take my feelings into consideration.(A)
15. By homeschooling I do not get much of a chance to show how capable I am.(C)

16. There are not many other homeschoolers that I am close to.(R)
17. I feel like I can pretty much be myself while homeschooling.(A)
18. The people I interact with regularly do not seem to like me much.(R)
19. I often do not feel very capable in homeschooling.(C)
20. There is not much opportunity for me to decide for myself how to do things in my homeschooling.(A)
21. People I interact with through homeschooling are generally pretty friendly towards me.(R)

H. Qualitative Question

1. Initially, what were your reasons for deciding to home school? Was there a particular event or experience that contributed to your decision to homeschool?

I. Demographic Questions

1. What is your age?
2. Marital Status: Single Married Divorced
3. Gender: M F
4. Ethnicity: ---- White (non Hispanic) ----- Black ----- Hispanic ----- Asian ---- Other
5. Income: --- \$25,000 or less ----- \$25,000 - \$50,000 ----- 50,000 - \$75,000 -----
\$75,000-\$100,000 ---->\$100,000
6. Your education: did not graduate high school GED high school diploma

 some college undergraduate degree some graduate school graduate degree
7. Do you currently or have you ever possessed a teaching certificate? __Yes __ No
8. No. of years homeschooling: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 >15
9. Number of children: 1 2 3 4 5 6 7 8 9 10 >10
10. Grade levels you teach (circle all that apply): Pre K 1 2 3 4 5 6 7 8 9 10 11 12
11. Do any of the child(ren) you home school have special needs? _____
12. To what degree does an outside governing body (such as a Department of Education, umbrella school, or local school district) provide oversight or require reporting of your homeschooling? Scale: 1 =no monitoring 3= some monitoring 5 = closely monitored

 1 2 3 4 5
13. How would you characterize your political leanings:

 1. Apolitical b. Liberal c. Moderate d. Conservative e. Libertarian
14. How often do you attend religious activities?

 1. Never 2. Occasionally 3. A few times a yr. 4. Monthly 5. Weekly

15. How many hours a week, concurrent with homeschooling, are you employed, including self-employment? (Exclude employment during breaks from school; such as, summer vacation.)
16. How many years have you homeschooled?
17. How likely are you to continue homeschooling next year?

1 = will not homeschool, 2 = probably won't homeschool, 3 = may homeschool, 4 = probably will homeschool, 5 = certain to homeschool

J. Dendrogram using Ward's Linkage

