



Student Learning, Development, Engagement, and Motivation in Higher Education

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Introduction

Student learning and development in higher education is a broad topic. While learning and development are certainly related components of the university experience, researchers have generally focused on one or the other, thus creating two research streams that rarely converge. In student development, there are at least three long-established bodies of American research with origins in addressing university student attrition, development of epistemological beliefs, and personal development. Astin and Tinto's ideas, while recently less often researched as distinct models, have been integrated into widely adopted concepts of engagement in higher education. American conceptions of engagement in higher education resulted in a national approach to quality assurance that has spread to Australia, China, and the United Kingdom. In student learning, there are at least three distinct models building, in part, on seminal cognitive processing and meta-cognitive processing research. One of these is an early cognitive processing-oriented model developed with adult learners, which came to be referred to as approaches to learning, its corollary learning environment research and related learning patterns research. Growing in salience during the same period and enclosed within the expanding area of meta-cognitive research, is the broad body of self-regulation research. In North America, this research grew from socio-cognitive theory or from learning strategies research. In Europe a wealth of starting points and models emerged. The final, and most recent model, building on twin platforms of motivational and cognitive processing research, is the Model of Domain Learning (MDL). Unlike the student development (North America-centered) research, the three models for understanding student learning during higher education have seen scant integration and only recent initial efforts at comparison and contrast. As a result, we presently have three distinct camps of research each examining the higher education experience from slightly different angles, each thereby yielding three perspectives that have yet to meaningfully learn from each other. Integration and cross-examination of these theories would help strengthen overall understanding of student learning and development. This article begins by presenting important academic journals and organizations that have emerged since the 1970s within the fields of student learning and development. The essential models addressing development and learning in higher education are each reviewed briefly, presenting and discussing the research that has shaped them. Motivation and beliefs for learning during higher education are included as a supplement for these models and important future directions for research.

Journals

The number of higher education journals has increased rapidly during the past two decades. The following list is not comprehensive but instead seeks to present the dominant generalist outlets both within and resulting from learning and development within higher education.

Higher Education Journals

This is a concise list of the most prominent generalist higher education journals that have a reputation for publishing cornerstone research in the area of student learning and development. While *Higher Education* focuses on international research of higher education, others emphasize on work from specific regions. *Journal of Higher Education* and *Research in Higher Education* predominantly publishes North American-centered research, while *Higher Education Research & Development* and *Studies in Higher Education* focus on European and Australasian contexts.

Higher Education.

This journal publishes a broad range of policy and empirical teaching and learning research. It strongly emphasizes higher education internationally, with many special issues focused on national systems of higher education about which little is known.

Higher Education Research & Development (HERD).

This is the official journal of the Higher Education of Research and Development Society of Australasia. The journal publishes a broad range of articles, with no specific focus regarding methods or domain. The journal historically publishes work predominantly from Australia, New Zealand, and Hong Kong.

Journal of Higher Education.

This long-running journal on higher education publishes empirical studies with a broad range of theoretical backgrounds. It has a clear focus on higher education specifically in the United States.

Research in Higher Education.

The journal publishes chiefly empirical studies with a strong focus on large-scale or intensive quantitative studies with an emphasis on North American-centered research.

Studies in Higher Education.

This is the official journal of the UK-based Society for Research into Higher Education publishing higher education research from a range of domains. It has a strong focus on original empirical research containing a large amount of European and Australasian research.

Related Journals

The following journals generally cast a wider net than the specific area of higher education and provide conceptual development for key theories, empirical research, reviews and meta-analyses relevant to student learning and development in higher education. For example, the cornerstone research of student approaches to learning (SAL) and self-regulated learning (SRL) traditions, respectively are published in *British Journal of Educational Psychology* and *Contemporary Educational Psychology*. While they are two broad educational psychology journals, other journals such as *Learning and Instruction*, *Instructional Science*, and *Learning and Individual Differences* have learning and teaching as a specific focus. Important reviews and key meta-analyses examining student learning and development in higher education are also published in *Educational Psychology Review* and *Psychological Bulletin*.

British Journal of Educational Psychology.

This broad educational psychology journal has established European connections but also links to international research in Australasia. This journal publishes a wide variety of research undertaken in higher education (as well as general education) including the beginnings of research in the areas of approaches to learning, learning patterns, and conceptions of learning.

Contemporary Educational Psychology.

This journal broadly publishes educational psychology research. Though rooted in American contexts, the journal is increasingly employing an international focus. The journal publishes on a rich tradition of self-regulation, motivation and belief related research undertaken in higher education contexts.

Educational Psychology Review.

This journal publishes review and meta-analysis articles from across the field of educational psychology. In addition to learning within higher education, the journal also publishes well-cited special issues addressing teaching and learning theories important to higher education learning and development.

Instructional Science.

This is an educational journal with a clear focus on the role and effect of learning environments on the practice of learning. While the journal addresses learning in a broad array of contexts, it regularly publishes and adds to the body of higher education related research.

Learning and Instruction.

This is a broad educational journal with an early focus on European (but increasingly international) research. While a more recently established journal, it is publishing some well-cited research in the areas of teaching and learning in higher education, specifically on learning strategies and motivation/beliefs.

Learning and Individual Differences.

This is a journal that firmly focuses on the psychology of learning with a specific emphasis on the role of learners' individual differences within learning processes.

Psychological Bulletin.

This journal publishes high-impact research from across the spectrum of psychology, focusing on many important higher education issues. The journal publishes key meta-analyses comparing instructional approaches or individual differences.

Prominent Organizations

The following is a list of long-standing, internationally respected research organizations with a specific focus on student learning and development within higher education.

European Association of Learning and Instruction.

A special interest group supporting a biennial conference and networking opportunities. While the SIG is focused on European contexts, its membership is largely international.

Higher Education Research and Development Society of Austral-Asia (HERDSA).

This is, as the name suggests, an Australasian-centered society that, along with its related journal, *HERD*, supports a wide variety of higher education initiatives and an annual large-scale conference.

Society for Research into Higher Education (SRHE).

This is a UK-centered society for the betterment of Higher Education. The society supports the publishing of a number of journals, the most prominent being *Studies in Higher Education*. The society holds a wide variety of activities for its members, including an annual conference and many other annual professional development activities.

Issues

This section overviews four areas central to the higher education student experience. The first section reviews theories modeling student learning during higher education. The second section examines research on personal development across the higher education experience. The third section reviews contributions to higher education engagement. Finally, the last section presents research in the umbrella of motivation to learn in higher education.

The Development of Student Learning During University

A wide variety of theories have been utilized to research student learning in higher education. This section focuses on two specific (SAL and MDL) theories and one broad theory (SRL). Each of these theories has seen substantial use within higher education research and make a significant and unique contribution to our understanding of the student learning experience. While these are generally not brought together when researching or conceptualizing student learning within higher education, it is the position of this brief review that only together do they provide a comprehensive patchwork for explaining how and why students learn effectively during university. This position has been realized by recent work of Coertjens 2018, Dinsmore and Fryer 2018, Fryer 2017, Fryer and Gijbels 2017, and Zusho 2017.

Coertjens, L. 2018. The relation between cognitive and metacognitive processing: Building bridges between the SRL, MDL, and SAL Domains. *British Journal of Educational Psychology* 88:138–151.

The article synthesizes seven review studies on the link between cognitive and metacognitive processing strategies, based on three different perspectives: SRL, MDL, and SAL. It compares definition, operationalization, grain size, and statistical methods used in each field to combine the results and build bridges between the three perspectives.

Dinsmore, D. L., and L. K. Fryer. 2018. The intersection between depth and the regulation of strategy use. *British Journal of Educational Psychology* 88:1–8.

Provides an introduction to reviews of the relations between metacognitive, self-regulatory, and cognitive processing primarily in higher education. It summarizes theoretical, conceptual, and operational issues found across the reviews including the effects of contexts, domains, motivation, and methodologies.

Fryer, L. K. 2017. Building bridges: Seeking structure and direction for higher education motivated learning strategy models. *Educational Psychology Review* 29.2: 325–344.

Challenges the long-standing division between SAL and SRL traditions, arguing for broader theoretical integration, and proposes a potential bridging theory with a focus on motivated learning strategies in higher education contexts.

Fryer, L. K., and D. Gijbels. 2017. Student learning in higher education: Where we are and paths forward. *Educational Psychology Review* 29:199–203.

Provides a summary of review papers about how the major research traditions on student learning in higher education feed current research, and how these theories diverge and can be integrated. It further notes both future directions and cul-de-sacs in research of student learning in higher education.

Zusho, A. 2017. Toward an integrated model of student learning in the college classroom. *Educational Psychology Review* 29.2: 301–324.

The review constructs an integration of three rarely compared fields of higher education research: SRL, learning patterns, and student engagement, culminating in an advanced and integrated SRL model. As this work was conducted in an American context, college refers to all higher education generally.

Approaches to Learning

Beginning as a program of research into adult learners cognitive processing (Marton and Säljö 1976a), what became known as approaches to learning by Marton and Säljö 1984 developed (see Richardson 2015) into conceptions of deep and surface learning as collative constructs combining intention and processing. Learning was hypothesized as being integrally connected to the learner's perception of the immediate learning environment. Initial small-scale research was adapted to assessing and improving teaching and learning in higher education primarily in the UK (Entwistle, et al. 1979; Entwistle and Ramsden 1983), and Australasia (Biggs 1989; Kember and Gow 1990). A second related body of research, loosely connected to the approaches to learning tradition, is the learning patterns model (Vermunt, 1988) for understanding student learning. This work began later and drew on qualitative research, the approaches to learning tradition, associated programs of research such as Pask 1976, and the growing body of self-regulation research in Europe and internationally. Relevant learning pattern research has been comprehensively reviewed by Vermunt and Donche 2017. Learning patterns describe specific combinations of conceptions of learning, motivations, processing, and regulation strategies concurrently found in student learning. More recent work in the area of approaches to learning, including Asikainen and Gijbels 2017, has failed to support early contentions that students' approaches might develop across the higher education experience, suggesting that, consistent with its earliest conceptions, these strategies are strongly connected to the learning environment.

Asikainen, H., and D. Gijbels. 2017. Do students develop towards more deep approaches to learning during studies? A systematic review on the development of students' deep and surface approaches to learning in higher education. *Educational Psychology Review* 1–30.

The article systematically reviews forty-three longitudinal studies on how students' approaches to learning develop in higher education, exclusive of research using the learning patterns model. The summary of measurements, frameworks, methods, and results of reviews studies are presented in a table in pp. 211–224. The researchers found no clear evidence for the development of approaches to learning toward a deeper approach in higher education.

Biggs, J. B. 1989. Approaches to the enhancement of tertiary teaching. *Higher Education Research and Development* 8:7–25.

Presents the 3P model of learning, which integrates teaching context (presage), students' approaches to learning (process), and the outcomes of learning (product). Based on the model, Biggs suggests the enhancing teaching-learning in tertiary education by considering both student learning and institutional realities within a single system.

Entwistle, N., and P. Ramsden. 1983. *Understanding student learning*. London: Croom Helm.

This accessible book addresses the broad-ranging research program of higher education students' approaches to learning and its relation to effects of academic environments (i.e., teaching and assessment methods) based on early works of Entwistle, Marton, Biggs, and Pask. It is accessible to students, lecturers, and general readers and is available online with open access.

Entwistle, N., M. Hanley, and D. Hounsell. 1979. Identifying distinctive approaches to studying. *Higher Education* 8:365–380.

Reviews the works of Entwistle, Marton, Biggs, and Pask on various aspects of studying. It extends a series of studies in Lancaster between 1968 and 1979 by developing an inventory of approaches to studying, identifying three major orientations to studying—meaning, reproduction, and achievement—of which study motivation, process, and outcomes are described on p. 376.

Kember, D., and L. Gow. 1990. Cultural specificity of approaches to study. *British Journal of Educational Psychology* 60:245–377.

Extends concepts and approaches to learning from research in Western contexts to Asian higher education. Identifies differences in the factor structure obtained from Western and Asian backgrounds with the use of Approaches to Studying Inventory and Study Process Questionnaire, particularly regarding the position of surface learning.

Marton, F., and R. Säljö. 1976a. On qualitative differences in learning I: Outcome and processes. *British Journal of Educational Psychology* 46:4–11.

Contains the initial work examining cognitive processing of adult participants. This is a seminal study focused on qualitative aspects of learning outcomes rather than on the common quantitative perspective of student learning. It proposes distinction between surface- and

deep-level learning outcomes and corresponding levels of cognitive processes.

Marton, F., and R. Säljö. 1984. Approaches to learning. In *The experience of learning*. Edited by F. Marton, D. J. Hounsell, and N. Entwistle, 36–55. Edinburgh, UK: Scottish Academic Press.

Reviews papers on qualitative differences in learning published in the 1970s to 1980s. It further introduces the terms “deep approach” and “surface approach” to learning to refer to learning with varying qualities.

Pask, G. 1976. Styles and strategies of learning. *British Educational Research Journal* 46:128–148.

Includes seminal research on study processes that builds a theoretical grounding for current learning theories. It identifies distinctive differences between learning style and strategies and conceptualizes holist and serialist learning strategies as well as various learning styles such as comprehension learning, operation learning, versatile learning, globetrotting, and improvidence.

Richardson, J. T. E. 2015. Approaches to learning or levels of processing: What did Marton and Säljö (1976a) really say? The legacy of the work of the Göteborg group in the 1970s. *Interchange* 1–31.

Criticizes errors in citing Marton and Säljö 1976a, both regarding the terms “approaches to learning” and “phenomenography” methodology, and surveys how the study has affected recent research on approaches to learning.

Vermunt, J. D. 1988. Regulation of learning, approaches to studying and learning styles of adult students. In *Regulation of learning*. Edited by P. R. J. Simons and G. Beukhof, 15–32. The Hague: Dutch Special Interest Group, Learning and Instruction.

Describes the development of the Inventory of Learning Styles (ILS) that was devised to diagnose learning patterns of adult learners. It also reviews the early model of regulation of learning on which the current learning pattern model established.

Vermunt, J. D., and V. Donche. 2017. A learning patterns perspective on student learning in higher education: State of the art and moving forward. *Educational Psychology Review* 29:269–299.

Focuses on research on student learning patterns in higher education published between 2004 and 2017, surveying the development of learning patterns theory and extensive findings on both internal and external relationships with various factors, derived from samples from more than thirty-six countries.

Self-Regulation

Self-regulation research grew from the early inquiries of Flavell 1979 into the role of meta-cognition generally and within student learning specifically in areas such as reading (Baker and Brown, 1984). Since the 1970s, self-regulation research expanded to include learning in higher education but not generally as a distinct body of research—with the exception of Vermunt’s application within the ILS. In Europe, two specific models have seen substantial use: social regulation of learning (Järvelä and Hadwin 2013) and self-regulation as a part of a broader understanding of individual differences within learning (Boekaerts 1997, Boekaerts 1999, Boekaerts 2010). In contrast, much of North American self-regulation research focused on self-regulation as learning strategies as can be seen in Winne 2013 and as a part of social cognitive theory and related models, of which examples are Pintrich 1999, Schunk 2001, and Zimmerman and Kitsantas 1997.

Baker, L., and A. L. Brown. 1984. Metacognitive skills and reading. In *Handbook of reading research*. Edited by P. D. Pearson, 353–394. New York: Longman.

The handbook discusses the role of metacognitive skills in a specific student learning activity, focused on the process of critical reading and comparatively describes metacognitive aspects of reading for meaning and reading for remembering.

Boekaerts, M. 1997. Self-regulated learning: A new concept embraced by researchers, policy makers, educators, teachers, and students. *Learning and Instruction* 7.2: 161–186.

Provides a conceptual review of self-regulated learning, focusing on five topics: (1) a six-component model of self-regulated learning that covers six types of prior knowledge that students need to study independently, (2) the difficulty in acquisition of self-regulated learning knowledge and skills is difficult, (3) the instruction of cognitive self-regulation, (4) the role of motivation within self-regulation, (5) design recommendations.

Boekaerts, M. 1999. Metacognitive experiences and motivational state as aspects of self-awareness: Review and discussion. *European Journal of Psychology of Education* 14.4: 571–584.

This integrative review discusses seven articles on aspects of metacognition in relation to self-regulation. It identifies remarks, inconsistencies, and missing links between seven studies based on three major overlapping but different conceptual frameworks, in which definition and operationalization of self-regulation are distinguished.

Boekaerts, M. 2010. Motivation and self-regulation: Two close friends. In *The decade ahead: Theoretical perspectives on motivation and achievement (Advances in Motivation and Achievement)*. Vol. 16B. Edited by T. Urdan and S. A. Karabenick, 73–112. London: Emerald.

This chapter provides a comprehensive overview of the link between motivation and self-regulation, drawing on emotions experienced during learning experiences.

Flavell, J. H. 1979. Metacognition and cognitive monitoring: A new area of cognitive development inquiry. *American Psychologist* 34:906–911.

This early work that raises interest in the concept of metacognition from the observation of children. It introduces a model of cognitive monitoring that consists of metacognitive knowledge, metacognitive experiences, goals, and strategies. This work opens the area of metacognition research to a broader array of investigation.

Järvelä, S., and A. F. Hadwin. 2013. New frontiers: Regulating learning in CSCL. *Educational Psychologist* 48:25–39.

Discusses the importance of regulated learning for collaboration, particularly for computer-supported collaborative learning (CSCL). It further establishes the structure and characteristics of three regulated learning forms—self-regulation, coregulation, and shared regulation—and provides implications for how to promote regulated learning by reviewing relevant pedagogical research on computer-based and web-based tools.

Pintrich, P. R. 1999. The role of motivation in promoting and sustaining self-regulated learning. *International Journal of Educational Research* 31:459–470.

Describes how different motivational beliefs may help to promote and sustain different aspects of self-regulated learning. It uses a general model of self-regulation including categories of (1) cognitive learning, (2) self-regulatory, and (3) resource management strategies to examine their relations with three general types of motivation/beliefs including: (a) self-efficacy beliefs, (b) task-value beliefs, and (c) goal orientations. Also summarizes findings across different samples and studies.

Schunk, D. H. 2001. Social cognitive theory and self-regulated learning. In *Self-regulated learning and academic achievement: Theoretical perspectives*. Vol. 2. Edited by B. J. Zimmerman and D. H. Schunk, 125–152. Mahwah, NJ: Lawrence Erlbaum Associates.

Discusses SRL from a social-cognitive theoretical perspective, regarding it as a situation-specific, context-dependent construct. It provides a theoretical overview of SRL, its key processes, implications to develop SRL, and principles for application to academic contexts. Also, it offers a theoretical foundation for research in applying the proposed principles.

Winne, P. H. 2013. Learning strategies, study skills, and self-regulated learning in postsecondary education. In *Higher education: Handbook of theory and research*. Edited by M. B. Paulsen, 377–403. New York: Springer.

The book chapter presents a view of SRL as study tactics or strategies (TS), firstly by introducing the four-phase model of SRL (perception of task, goal setting, carrying out, evaluation) in higher education. Secondly, the chapter reviews methods used in major studies on TS and SRL. It also points out the lack of practicality of research in higher education and the reason behind this problem.

Zimmerman, B. J., and A. Kitsantas. 1997. Developmental phases in self-regulation: Shifting from process goals to outcome goals. *Journal of Educational Psychology* 89:29–36.

Points to the importance of metacognition such as self-monitoring and goal setting on the acquisition of cognitive skills (i.e., dart throwing skills), focusing on the formative role of social experiences in the qualitative development of learning processes. It provides empirical support for social cognitive theory.

Models of Domain Learning

Of the three higher education–related areas of student learning research models, MDL is the most recently developed. MDL is focused specifically on describing learner development within a specific domain of study as can be seen in Fives and Dinsmore 2018, Alexander 2003, and Alexander, et al. 1998. MDL is built on the twin platforms of cognitive processing (depth) and interest (quantity and quality) which are hypothesized as growing together with increasing competence in a specific domain of study according to Alexander and Murphy 1998 and Alexander, et al. 1997. Of the dominant theories utilized to research learning during higher education, MDL is uniquely situated to capture both student learning and development; at the same time, it provides a robust framework for understanding how domain-specific competence and students' reasons for persisting in the domain converge. In the United States (the research context below), “college” denotes all higher education experiences, whereas in other contexts around the world (e.g., Canada, Australia) they may refer to shorter associate degrees at non-university institutions.

Alexander, P. A. 2003. The development of expertise: The journey from acclimation to proficiency. *Educational Researcher* 32:10–14.

The short article provides a brief understanding of the MDL research program by comparing the MDL with traditional models of expertise and summarizing the key structure of the MDL model. Also, it bridges the findings of past generations of MDL research and academic practice.

Alexander, P. A., and P. K. Murphy. 1998. Profiling the differences in students' knowledge, interest, and strategic processing. *Journal of Educational Psychology* 90:435.

The article draws attention to intra-individual differences in learning by investigating the nature, consistency, and malleability of academic profiles. It argues for the integration of student knowledge, interest, and strategic processing to explain maximal performance and identifies various profiles across one semester of college/university in the United States.

Alexander, P. A., P. K. Murphy, and J. M. Kulikowich. 1998. What responses to domain-specific analogy problems reveal about emerging competence: A new perspective on an old acquaintance. *Journal of Educational Psychology* 90:397–406.

The article points out the usefulness of responses to domain-specific analogies for information about students' knowledge, their strategic processing, and academic development.

Alexander, P. A., P. K. Murphy, B. S. Woods, K. E. Duhon, and D. Parker. 1997. College instruction and concomitant changes in students' knowledge, interest, and strategy use: A study of domain learning. *Contemporary Educational Psychology* 22:125–146.

The article conceptualizes three stages in domain learning (acclimation, competence, and proficiency/expertise), characterized by changes between and within student knowledge (domain or topic knowledge), interest (individual or situational), and strategy use variables.

Fives, H., and D. L. Dinsmore, eds. 2018. *The model of domain learning: Understanding the development of expertise*. New York: Routledge.

This comprehensive review of the MDL literature examines the model's past and provides insight into its future. This book includes chapters presenting new empirical, practice-oriented, and meta-analytic perspectives on the model. It is relevant for researchers in this area and is also accessible to educators from unrelated fields.

Personal Development During University

Higher education has long been heralded not only as an opportunity to expand academic horizons but also as a time for personal development. Writing in this area has generally focused on two types of development. The first is the development of students' beliefs about knowledge: what it is and how it is learned. The second is more comprehensive and includes the development of everything from personal ethics to identity.

Epistemological Beliefs

The framework of Perry 1970 for describing students' epistemological belief development was a pivotal step toward modeling how students might be expected to adjust their knowledge beliefs in the face of higher education. Perry's scheme consisted of nine positions, organized into three categories that describe the potential development of students from a dualistic to an increasingly relativistic perspective. A dualistic belief is described as a primitive epistemology within which a student who perceives teachers as knowing the truth and passing this knowledge on to the student. A relativistic belief regarding knowledge stands at the opposite end of the continuum. A relativist perceives, in varying degrees, that knowledge of something is contextually situated and is less likely to perceive an authority on a topic as the final source of understanding. Although the importance of Perry's initial research should not be minimized, it has been criticized for the limited nature of his sample: entirely male and attending Harvard University (Hofer and Pintrich 1997). Perry's model has had a sustained effect on developmental and learning research across the decades since its inception, as exemplified in Hofer 2004 and Muis, et al. 2006.

Hofer, B. K. 2004. Exploring the dimensions of personal epistemology in differing classroom contexts: Student interpretations during the first year of college. *Contemporary Educational Psychology* 29:129–163.

The article reports empirically and identifies qualitatively four dimensions of personal epistemology, namely certainty of knowledge, simplicity of knowledge, source of knowledge, and justification for knowing. These dimensions are useful in considering the sociocultural nature of epistemological beliefs.

Hofer, B. K., and P. R. Pintrich. 1997. The development of epistemological theories: Beliefs about knowledge and knowing and their relation to learning. *Review of Educational Research* 67:88–140.

The review discusses five central models of epistemological development in terms of methodological and theoretical issues as well as their relations with motivational or cognitive constructs. It further suggests that individual epistemology in these models commonly comprises multiple dimensions on a developmental continuum—influenced by Perry 1970.

Muis, K. R., L. D. Bendixen, and F. C. Haerle. 2006. Domain-generality and domain-specificity in personal epistemology research: Philosophical and empirical reflections in the development of a theoretical framework. *Educational Psychology Review* 18:3–54.

The review integrates nineteen empirical studies on the domain-specificity/domain-generality issues in personal epistemology. It addresses the lack of philosophical groundings in the area of personal epistemology and synthesizes the contrasting perspectives on domain issues in a framework.

Perry, W. G. 1970. *Forms of intellectual and ethical development in college years: A scheme*. New York: Holt, Rinehart, and Winston.

The article is the pioneering work on individuals' beliefs about knowledge that significantly impacted existing theories and structure of epistemological beliefs for college students. Based on a study that lasted for twenty years, Perry proposes a developmental scheme of intellectual and ethical development in college students.

Personal Growth

In addition to students developing their conceptions of what knowledge is and how it is obtained, university has long been seen as a time and place for personal growth. It is this experience that Chickering 1969 discussed in his seminal book. This work was later developed into principles for good practice in higher education by Chickering and Gamson 1987, acting as a source of guidance for writers and educators. The following resources are included to provide historical context and complement the overall discussion on motivation, engagement, and development research in higher education.

Chickering, A. W. 1969. *Education and identity*. San Francisco: Jossey-Bass.

Contains a comprehensive discussion of the potential outcomes of the university experience. A framework is presented to portray the university as an opportunity for students to address fundamental questions about "who they are" and "where they are going." Seven major outcomes of university are reviewed: managing emotions, problem solving, independence, mature interpersonal relationships, establishing identity, achieving competence, and developing integrity.

Chickering, A. W., and Z. F. Gamson. 1987. Seven principles for good practice in undergraduate education. *AAHE Bulletin* 3:7.

Presents seven principles whose aims are to support students' development across the university experience. The article is written explicitly for educators and administrators.

Adapting to and Persisting During University

A substantial proportion of American research into learning experiences during higher education has centered on addressing higher education dropout issues. The negative implications of dropout for many students, for institutions, and for the national economy stimulated this line of investigation. A considerable proportion of the research in this area can be traced back to two strongly related bodies of research: Astin's program of involvement research and Tinto's program of integration research. These programs eventually converged on Student Engagement in Higher Education. Student engagement has grown beyond the initial issues of dropout that stimulated the early work in this area and became an international resource for addressing quality assurance in the area of higher education student experiences. Both involvement and integration research programs were primarily conducted in the United States, so the term "college" below is interchangeable with higher education.

Involvement

Astin's theory of involvement arises from his early work in the areas of the determinants of higher education outcomes (Astin 1973) and issues affecting dropout from university (Astin 1975). Astin 1984 defined the conception of involvement as "the amount of physical and psychological energy that the student devotes to the academic experience." Astin states that while motivation is an important part of involvement, it is what the student does that matters. As a result, he strongly suggests that increasing student involvement should be a key focus of educators within higher education. Astin presents a case for involvement as a developmental theory and argues for its superiority to other long-standing approaches to higher educational learning environments (i.e., assembling the best subject-matter experts, resource-driven models, or focusing on the student's individual developmental trajectories). The resources below are historic precursors to the work of student engagement in higher education.

Astin, A. W. 1973. Measurement and determinants of the outcomes of higher education. In *Does college matter? Some evidence of the impacts of higher education*. Edited by L. C. Solomon and P. J. Taubman. New York: Academic Press.

This chapter explains the difficulties in measuring university outcomes by presenting a model of a higher education system comprising student input, student output, and college environment. The work demonstrates how determinants related to individual students' social

class, ability and college quality influence benefits of short-term higher education including academic achievement, persistence and satisfaction level.

Astin, A. W. 1975. *Preventing students from dropping out*. San Francisco: Jossey-Bass.

The book provides an in-depth description of student involvement theory, drawing from results of a longitudinal study of college dropouts. Identifies factors in the college environment that significantly affect the student's retention in college.

Astin, A. W. 1984. Student involvement: A developmental theory for higher education. *Journal of College Student Personnel* 25:297–308.

Formulates and describes student involvement as a developmental theory in higher education, built upon traditional pedagogical theories, developmental theories, and psychological concepts such as motivation. It rationalizes involvement theory by reinterpreting the 1975 study's findings on factors causing student attrition.

Integration

Tinto and Astin's work in the area of student development during higher education have often been discussed together as in Pascarella and Terenzini 1991. Efforts have been made to pull their research together into a range of integrated models such as Milem and Berger 1997. Tinto 1975 and Astin's research programs had similar origins, each seeking to address long-standing issues of dropout within American higher education. While Tinto 1993 also recognized the essential role of involvement within positive outcomes during higher education, his focus was on how and the degree to which students integrated into "college life." Tinto's model described the process of integration as having three stages: separation from their previous community, transition to their community and finally incorporation into their college community. Tinto's writings and research have worked toward an increasingly refined means of understanding, measuring, and supporting student engagement across a broad array of higher education learning contexts.

Milem, J. F., and J. B. Berger. 1997. A modified model of college student persistence: Exploring the relationship between Astin's theory of involvement and Tinto's theory of student departure. *Journal of College Student Development* 38:387.

The paper suggests and tests a modified version of Tinto's model of college student departure that focused mostly on perceptual aspect of student integration by incorporating Astin's involvement construct that emphasizes behavioral aspect.

Pascarella, E. T., and P. T. Terenzini. 1991. *How college affects students*. San Francisco: Jossey-Bass.

This review includes over three thousand studies of the effects of higher education experiences on student development. A considerable portion of the book attempts to translate the findings into implications for future research and best practices in education and administration. A second volume in 2005 provides an update on this work.

Tinto, V. 1975. Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research* 45:89–125.

The article proposes an initial conceptual model of dropout from higher education that seeks to clarify the processes behind students' dropout decisions, interactions between individuals and the institution, on both social and academic level—a diagram on page ninety-five illustrates the multifaceted theoretical model.

Tinto, V. 1993. *Leaving college: Rethinking the causes and cures of student attrition research*. 2d ed. Chicago: Univ. of Chicago Press.

Tinto proposes revisions on the initial conceptual model of student departure from higher education by integrating broad-ranging research on the multiple causes of student attrition into an interactionalist model. He presents a detailed discussion of how student behavior and perception interact with their social and academic environments as they move toward greater integration, and also informs institutions of principles and policies for student retention.

Student Engagement

Concepts underlying the multidimensional umbrella term Higher Education Student Engagement originated from many sources (e.g., the research programs of Astin and Tinto) including Ralph Tyler's student experience research (e.g., Tyler 1936, Tyler 1966). Two aspects of his research program made considerable contributions to future research in this area: secondary to tertiary educational connections and the essential role of time on task for student outcomes. Tyler's investigations in this second crucial aspect of learning within higher education built on and extended much of Pace's work, from early writings reviewing the outcomes of higher education (Pace 1979) to the eventual development of the Course Student Experience Questionnaire (CSEQ; Pace 1984). According to Kuh, et al. 1997, the CSEQ was designed to measure three elements of "good undergraduate education": student-faculty contact, cooperation among students, and active learning. Furthermore, other self-reported outcomes were collected, representing development in social, intellectual and personal areas. This reflected the fact that across the two decades since Pace's initial work, the seeds of student engagement had grown to include two additional core concepts: that is, involvement and social engagement (Astin 1984, Pascarella 1985, Tinto 1986). This area of research continues to grow across North America (Kuh 2009), Australia (Coates 2009), the UK (Bryson 2014), and Mainland China (Luo, et al. 2009).

Astin, A. W. 1984. Student involvement: A developmental theory for higher education. *Journal of College Student Personnel* 25:297–308.

Introduces student involvement theory as a means of clarifying the literature on student development in higher education. The literature as it stands is proposed as being a confusing diversity of research variables, terms, and methodologies for studying the same or similar phenomena.

Bryson, C. 2014. *Understanding and developing student engagement*. New York: Routledge.

The book is written for both staff and students, taking three different perspectives (researchers, students, and staffs) on student engagement in UK universities. It includes substantial narratives written by students and staffs' direct experience of applying innovative practices to enhance engagement.

Coates, H. 2009. Development of the Australasian survey of student engagement (AUSSE). *Higher Education* 60:1–17.

The AUSSE is introduced as a means of improving quality management in Australasian higher education. A review of the developmental foundations and characteristics of the survey is presented. Selected results from AUSSE in 2008, compared to the US version NSSE 2008 are reported.

Kuh, G. D. 2009. The national survey of student engagement: Conceptual and empirical foundations. *New Directions for Institutional Research* 141:5–20.

Summarizes the history of conceptualizing student engagement in the literature since the 1930s. It also reviews a tool to assess student engagement, NSSE, in terms of its development, utility in 2000–2009, structure and impact on institutional research in US higher education. Appendix B describes five NSSE benchmarks for student development.

Kuh, G. D., C. R. Pace, and N. Vesper. 1997. The development of process indicators to estimate student gains associated with good practices in undergraduate education. *Research in Higher Education* 38:435–454.

The article describes the link between personal, social, and intellectual student gains from American university education and good practices such as student-faculty contact, cooperation among students, and active learning.

Luo, Y., H. Ross, and Y. H. Cen. 2009. *Developing NSSE-China in the context of globalization: A report of measurement reliability and validity*. Beijing: Fudan Education Forum.

In Chinese. The report points out the need for cross-cultural measurement of higher education experiences and presents a Chinese version of NSSE, of which cultural adaptation, reliability, and validity are discussed.

Pace, C. R. 1979. *Measuring outcomes of college: Fifty years of findings and recommendations for the future*. Jossey-Bass Series in Higher Education. San Francisco: Jossey-Bass.

This volume is a summary of fifty years of research examining achievement testing, current and graduating student experiences, and institutional goals. It further seeks to connect how self-perceptions change and the role university experiences can play. In addition to the nature of this specific relationship, the volume also aims to describe the key changes students and graduates experience as a result of university. A considerable portion of this volume is concerned with understanding and generalizing institutional impact.

Pace, C. R. 1984. *Measuring the quality of college student experiences. An account of the development and use of the college student experience questionnaire*. Los Angeles, CA: Higher Education Research Institute.

This book reports the development of a measure that can assess the quality of student experiences in higher education. It is based on data from the national survey of student engagement (NSSE) in the United States. Meaningful results from using the measure are reported.

Pascarella, E. T. 1985. *College environmental influences on learning and cognitive development: A critical review and synthesis*. *Higher Education: Handbook of Theory and Research* 1:1–61.

This article reviews work that synthesizes the accumulated evidence related to the effects of college on learning and cognitive development, particularly grade point average. By building upon evidence for cognitive growth in relation to differential college experiences found in papers in the 1970s and 1980s, a general casual model is drawn on p. 50.

Tinto, V. 1986. *Theories of student departure revisited*. *Higher Education: Handbook of Theory and Research* 2:359–384.

The review discusses different theories, from the late 1960s to 1980s, about student attrition in higher education. The paper categorizes them into psychological, societal, economic, organizational, and interactional analysis. It argues for the inclusion of interactive and longitudinal aspects of student experiences for a new theoretical synthesis of student attrition.

Tyler, R. W. 1936. *Defining and measuring objectives of progressive education*. *Educational Research Bulletin* 15.3: 67–72.

Provides a proposal for the clarification of the educational purposes of school education. It proposes both the measurement of student development and how to measure and extends discussion to college education regarding the assessment of student development.

Tyler, R. W. 1966. *Assessing the progress of education*. *Science Education* 50:239–242.

Provides a rationale for a national assessment of the progress of American education and a description of what is measured and reported in what ways.

Motivations to Learn and Develop During University

The focus of most research into higher education learning and development has centered on student behavior. With important developmental models emphasizing that while motivation is important, what students actually do should be the focus of educators' efforts. Important models of student learning commonly applied to higher education have also included motivation (i.e., approaches to learning and models of domain learning). Yet, these models have generally addressed the role of student motivation in constrained ways. These models do not fully account for the richness of our growing understanding of the impact of motivation on learning and student well-being. No specific motivational framework has been established to explain student learning and/or development during higher education. However, some major theories have seen significant recent use in these learning contexts. Three models that have a strong connection with higher education experiences are students' goals, self-determination theory, and the growing body of literature examining interest development across formal education.

Goals

Research into the nature and role of an individual's goals both within education and across the human experience has been an extensive field of study. Research such as in Ford 1992 has sought to taxonomize the plethora of existing goal models, resulting in complex lists of interconnected constructs. The context of the current discussion of student development and learning during higher education will be limited in our review to two types: proximal (short-term) and distal (long-term) goals for learning. The present review will focus on discussing just two of the areas of research into these goal types. Socio-cognitive research including Bandura 1993 has emphasized the essential role of proximal goals paired with academic self-efficacy for students' success. Researchers have demonstrated the role of proximal goals within student learning such as in Zimmerman, et al. 1992 and Zimmerman and Kitsantas 1997. Proximal goal setting has been a major component of many models of SRL and clearly an essential component of the higher education learning and developmental process. Running parallel to discussions regarding the importance of proximal goals within student learning has been the body of research emphasizing the role of Future Time Perspective (FTP) and delayed gratification within students' success across longer undertakings such as a higher education degree (Bembenutty and Karabenick 1998). Substantial research has examined the role of FTP (e.g., Bilde, et al. 2011, Simons, et al. 2000, and Simons, et al. 2004). Furthermore, the quality of these distal goals has been demonstrated by Fryer 2015 and Fryer, et al. 2014 as also being of theoretical importance and having significant practical implications for learning processes and outcomes.

Bandura, A. 1993. Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist* 28:117–148.

Surveys an extensive body of research on perceived self-efficacy that influences cognitive development through four main processes; cognitive, motivational, affective and selection processes. It also discusses different perspectives of students, teachers and faculties on efficacy belief and academic development.

Bembenutty, H., and S. A. Karabenick. 1998. Academic delay of gratification. *Learning and Individual Differences* 10:329–346.

Discusses the development of a scale to measure academic delay of gratification (ADOGS), with a focus on a specific university context (see the appendix). By using the scale, the concept of academic delay of gratification is integrated into the research body of motivation and cognitive, metacognitive, and resource management strategies as a self-regulatory learning strategy.

Bilde, J. D., M. Vansteenkiste, and W. Lens. 2011. Understanding the association between future time perspective and self-regulated learning through the lens of self-determination theory. *Learning and Instruction* 21:332–344.

The paper examines the link between FTP theory and Self-Determination Theory (SDT), as quantitative and qualitative views on motivation, respectively. It explains the positive relation between FTP and SRL by employing motivation subtypes within the SDT framework.

Ford, M. E. 1992. *Motivating humans. Goals, emotions, and personal agency beliefs*. Newbury Park, CA: SAGE.

The book is written within the framework of Motivation System Theory (MST), synthesizing thirty-two motivation theories in a table (pp. 156–171) comparing personal goals, agency belief, and emotional arousal. It is accessible for graduate and advanced undergraduate students and provides suggestions for further reading at the end of each chapter.

Fryer, L. K. 2015. Predicting self-concept, interest and achievement for first-year students: The seeds of lifelong learning. *Learning and Individual Differences* 38:107–144.

The study extends earlier findings (see also Fryer, et al. 2014) on internally regulated goals' positive impact on learning by integrating these types of instrumental goals (proximal externally regulated, distal externally regulated, and distal internally regulated) into a longitudinal, reciprocal model with self-concept and achievement.

Fryer, L. K., P. Ginns, and R. Walker. 2014. Between students' instrumental goals and how they learn: Goal content is the gap to mind. *British Journal of Educational Psychology* 84.4: 612–630.

The article demonstrates the predictive role of instrumental goals (distal externally regulated, distal internally regulated, and proximal externally regulated) on future motivation, deep approaches to learning, and academic achievement. It provides clear evidence for the positive effects of internally regulated goals on learning outcomes.

Simons, J., S. Dewitte, and W. Lens. 2000. Wanting to have vs. wanting to be: The effect of perceived instrumentality on goal orientation. *British Journal of Psychology* 91:335–351.

The article addresses the differences between two motivational theories, the goal theory and FTP theory by revealing the association of three instrumentalities (externally motivated and regulated; externally motivated and internally regulated; and internally motivated and regulated) for one's goal orientation (task oriented versus performance oriented).

Simons, J., M. Vansteenkiste, W. Lens, and M. Lacante. 2004. Placing motivation and future time perspective theory in a temporal perspective. *Educational Psychology Review* 16:121–139.

This review paper discusses the conceptual development of FTP theory has developed conceptually throughout the previous twenty years by presenting empirical evidence of the theory's motivational importance from a large body of research.

Zimmerman, B. J., and A. Kitsantas. 1997. Developmental phases in self-regulation: Shifting from process goals to outcome goals. *Journal of Educational Psychology* 89:29–36.

This article demonstrates how the changing types of goals operate differentially in self-regulated learning of complex skills, in relation to self-monitoring, self-efficacy, and attribution beliefs. It also points out the effect of social cognitive factors in goal-setting behaviors.

Zimmerman, B. J., A. Bandura, and M. Martinez-Pons. 1992. Self-motivation for academic attainment: The role of self-efficacy beliefs and personal goal setting. *American Educational Research Journal* 29:663.

The study tests a causal model for student motivation by analyzing the role of goal setting and self-motivational factors such as self-efficacy for academic attainment and self-efficacy for self-regulated learning in students' academic achievement.

Self-Determination Theory

Self-determination theory (SDT) from Deci and Ryan 1985 has been steadily expanding our awareness of the crucial role of the quality of an individual's motivation. Along with distal goal research of Lens, et al. 2009, it has framed research that has demonstrated that it is not just what students do or even how much they do during higher education. Experiments, quasi-experiments and research in naturalistic settings utilizing SDTs conceptions of goal quality have demonstrated that, contrary to contentions by some engagement theorists, we cannot restrict our focus to what (and how much) students do. Vansteenkiste, et al. 2006 showed that students undertaking ostensibly the same tasks, for the same amount of time, often vary substantially in the quality of their learning outcomes. The quality of cognitive engagement would seem to be the key mediator, but much more difficult to measure than many of the variables we currently use to assess the student experience during higher education.

Deci, E. L., and R. M. Ryan. 1985. *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.

Based on the psychological needs for autonomy, competence, and relatedness as the basis of human intrinsic motivation, SDT is introduced in the form of sub-theories, namely Cognitive Evaluation Theory, Organismic Integration theory, and Causality Orientation Theory throughout the chapters of the book. The work provides an extensive review of the underlying concepts foundational to contemporary motivation research.

Lens, W., M. P. Paixao, and E. Herrera. 2009. Instrumental motivation is extrinsic motivation: So what??? *Psychologia* 50:21–40.

Based partially on SDT, the article reviews empirical findings that shift a paradigm from a mere distinction between intrinsic versus extrinsic goals, which has limited our understanding of the possibility of high-quality instrumental/extrinsic motivation, to the matter of

goal content and how it can regulate behavior. The theoretical development of motivational psychology is summarized in a well-organized and accessible manner.

Vansteenkiste, M., W. Lens, and E. L. Deci. 2006. Intrinsic versus extrinsic goal content in self-determination theory: Another look at the quality of academic motivation. *Educational Psychologist* 41:19–31.

Reviews research on the quality of motivation within SDT, moving from a discussion of the regulation of behavior approach to the goal contents approach related to learning activities. It further discusses differences of these two approaches and other recent development within SDT.

Interest

Interest is a predictor, mediator and outcome of the higher education experience. However, it has been often taken for granted and has only recently become the focus of some attention within higher education research. It has been researched in educational contexts through the structure provided by (a) the four-phase model of interest development proposed by Hidi and Renninger 2006 and Renninger and Hidi 2011, (b) the previously mentioned cognitive strategy model MDL in Alexander 2003, and (c) higher education curriculum-oriented models (e.g., Fryer, et al. 2016). The four-phase model describes logical stages through which individuals' progress across the learning experience in a specific domain. Interest is an important part of any higher education learning and development discussion due to its connections to persistence. Furthermore, interest is also clearly linked to the lifelong learning students embark upon after university. Higher education researchers thinking about bringing these models to their courses should consider reviewing the growing literature on effective motivational interventions in higher education contexts by referring to Harackiewicz and Priniski 2017. In the short-term view of learning and development during higher education, the *why* is just as important as the *how* and *how much*. In the long(er) term it is reasonable to expect the *why* to eclipse the position of *how*, as persistence in education (formal and informal) across the lifespan continues to grow in importance.

Alexander, P. A. 2003. The development of expertise: The journey from acclimation to proficiency. *Educational Researcher* 32:10–14.

The article provides a succinct overview of the theory supporting the Model of Domain Learning (MDL), the MDL research program and the key structure of the MDL model.

Fryer, L. K., M. Ainley, and A. Thompson. 2016. Modeling the links between students' interest in a domain, the tasks they experience and their interest in a course: Isn't interest what university is all about? *Learning and Individual Differences* 50:157–165.

The paper models three levels of interest (domain-, course- and task-level) each critical to the development of interest during higher education. Results identify the complete mediation of task interest through course interest to domain interest across an academic semester. Highlights the complex moderating retrospective role of self-concept for the prospective role of self-efficacy within interest development during a university course of study.

Harackiewicz, J. M., and S. J. Priniski. 2017. Improving student outcomes in higher education: The science of targeted intervention. *Annual Review of Psychology* 69:11.1–11.27.

The work critically reviews targeted intervention studies in higher education, mostly between 2010 and 2017. The reviewed studies are categorized into interventions on students' perceived value of academic tasks (task value), frames of academic challenges (framing), and personal values (values affirmation). The reviewed studies are summarized in tables on pp. 413–416. The implications of intervention studies are discussed, highlighting the critical role in bringing models into practice.

Hidi, S., and K. A. Renninger. 2006. The four-phase model of interest development. *Educational Psychologist* 41:111–127.

Introduces the four-phase model of interest development and presents an extended review of relevant empirical findings from interest and learning research. It provides detailed definition, description, the necessary support, intra-personal conditions related to the

development for each phase. Case illustrations of two college students as examples of the interest development assist the reader in understanding the model and provide direction for its practical application to teaching and learning situations.

Renninger, K. A., and S. Hidi. 2011. Revisiting the conceptualization, measurement, and generation of interest. *Educational Psychologist* 46:168–184.

Provides an overview of interest research published between 2000 and 2010. It discusses the conceptualization of interest with various foci (development, emotion, task feature/experience, value, vocational interest), the measurement of interest (self-report, behavioral measure, neuroscientific methods), and how to generate interest (activities/task or self-generation). It further aims to inform researchers of a series of options for studying interest and its development.

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