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AFFECTIVE SOCIAL NEUROBIOLOGY AND  
STUDENT FORMATION IN CHRISTIAN  
HIGHER EDUCATION INSTITUTIONS:  
A TRANSDISCIPLINARY MULTIMETHOD STUDY

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A Thesis  
Presented to  
the Faculty of  
The Southern Baptist Theological Seminary

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by  
Jacob Earl Porter  
May 2019

**APPROVAL SHEET**

AFFECTIVE SOCIAL NEUROBIOLOGY AND  
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For the glory of God, my Rock and Redeemer,  
whose lovingkindness never fails,  
and with unspeakable gratitude to Kristen, my wife,  
who reminds me of His love.



## TABLE OF CONTENTS

	Page
LIST OF TABLES.....	vii
LIST OF FIGURES .....	viii
PREFACE .....	ix
INTRODUCTION.....	1
Introduction to the Research Problem .....	2
Need for Study.....	3
Benefit of Study.....	4
Current Status of the Problem .....	5
Foundations of the Study .....	9
Theological Foundations.....	9
Philosophical Foundations .....	11
Purpose of the Study .....	13
Research Questions.....	14
Delimitations .....	14
Definitions.....	14
Procedural Overview .....	18
Research Assumptions.....	22
Summary .....	22
PRECEDENT LITERATURE .....	24
Biblical-Theological and Philosophical Foundations.....	25
The <i>Imago Dei</i> and Redemptive History .....	26
The <i>Imago Dei</i> and the Composition of Human Beings.....	32

Chapter	Page
Christian Spiritual Formation of Students .....	45
Christian Spiritual Formation and Wholistic Dualism .....	49
Spiritual Formation in Higher Education.....	53
Affective Social Neurobiology.....	58
Foundations for Affective Social Neurobiology .....	59
The Embodied Mind and Christian Spiritual Formation .....	79
METHODOLOGICAL DESIGN.....	96
Research Questions.....	96
Design Overview .....	96
Population .....	97
Sample.....	97
Limitations of Generalizations .....	98
Data Sources.....	98
Data Selection.....	99
Data Coding and Analysis.....	101
Data Analysis .....	104
Evaluation and Conclusions.....	105
ANALYSIS OF FINDINGS .....	106
Research Question 1 .....	106
Hypothesis 1 .....	121
Hypothesis 2.....	124
Hypothesis 3 .....	125
Hypothesis 4.....	128
Integration of the Hypotheses for Research Question 1 .....	131
Research Question 2 .....	135
Hypothesis 1a .....	136

Chapter	Page
Hypothesis 2a .....	138
Hypothesis 3a .....	139
Hypothesis 4a .....	141
Integration of Hypotheses for Research Question 2.....	143
Transposition and Composition of Research Findings .....	146
CONCLUSIONS .....	153
Research Implications and Applications.....	153
Research Implications.....	154
Research Applications .....	160
Research Limitations .....	164
Further Research.....	165
 Appendix	
1. SUMMARY OF DATA SELECTION PROCESS.....	167
2. CODING FORM FOR ASSESSING STUDY QUALITY AND FITNESS.....	171
3. SUMMARY OF EVALUATION BASED ON QUALITATIVE STUDY CODING FORM.....	173
4. RHODES DISSERTATION OPEN CODING RESULTS .....	174
5. SNAPP DISSERTATION OPEN CODING RESULTS .....	177
6. NUNEZ DISSERTATION OPEN CODING RESULTS .....	179
7. SHEARD DISSERTATION OPEN CODING RESULTS .....	181
8. INITIAL DATA INTEGRATION FOR OPEN CODING OF THE META-ANALYSIS .....	183
BIBLIOGRAPHY.....	186

## LIST OF TABLES

Table	Page
1. Category development in the grounded qualitative meta-analysis .....	121
2. Comparisons of hypotheses for Research Questions 1 and 2.....	137
3. Comparison of integration of hypotheses for Research Questions 1 and 2 .....	144
A1. Summary of data selection process .....	167
A2. Summary of evaluation based on qualitative study coding form.....	173
A3. Initial data integration for open coding of meta-analysis.....	183

## LIST OF FIGURES

Figure	Page
1. Johnson's four orders in relationship to one another .....	39
2. The human nervous system .....	65
3. Dimensions of affect and the window of tolerance .....	73
4. Processing in the right and left orbitofrontal cortex .....	76
5. Selective coding summary of Rhodes dissertation .....	110
6. Selective coding summary of Snapp dissertation .....	113
7. Selective coding summary of Nunez dissertation .....	115
8. Selective coding summary of Sheard dissertation .....	119
9. Integration of the hypotheses for Research Question 1 .....	132
10. Integration of the hypotheses for Research Question 2 .....	145
11. Transdisciplinary transposition of research findings .....	147

## PREFACE

The topic of this thesis is born of a sense of awe as I consider the fearfully and wonderfully made creatures that we are. For many years I have marveled at God's handiwork in the creation of human beings, at the miracle of life in this world full of delight and blessing. Like all of us, I have also felt the bitter sting of sin and death, the pain of the fall, and the ache for our final renewal. My work with those suffering the sequelae of relational trauma, and my own journey with such burdens, has brought me back again and again to the truth that Christ alone is our hope. The gospel leads ultimately to the glory of God in the redemption of the whole person—of all that we are, body and soul—reconciled to the God with whom we were created to be in connection.

Though this thesis is most directly about the spiritual formation of students at Christian higher education institutions, my hope is that the research presented here will be a benefit to pastors, youth ministers, counselors, chaplains, and all entrusted with a ministry of soul care. The process of completing this thesis has reinforced within me the strong conviction that we cannot effectively care for the soul without caring for the whole person. Our desire to see Christ formed in those we serve and love will come about as we speak and model the gospel before them, patiently walking with them through fears and failures, leading them to experience a joyful, abiding knowledge of God in Christ. It may sound strange to think of matters such as affective hyperarousal or dissociated self-states in efforts of formation and discipleship, but they are intricately involved in the process of knowing and becoming like Jesus, our God who took on biophysiological flesh.

Many have helped me to accomplish this thesis, and I am humbled by the love and support I have received from them. I am grateful to the congregation of First Baptist Church of Mont Belvieu, Texas, who encouraged my continued education for the thirteen

precious years of my tenure there. To Mom and Grandmother, your tolerance and skill for proofreading is exceeded only by your dedication to your family; you hold us together with grace. I must give thanks for my father, who has modeled Christlike service my whole life, showing me what it means to sacrifice for others with integrity, compassion, and kindness. For my sister, Jennifer, who would never let me forget it if I did not mention her here, I give thanks, as well; having her is knowing I will always have a place to go. Lastly, to my wife, Kristen: you have shown me what it means to forgive and love, and that has changed me for the good.

I extend thanks to the faculty of The Southern Baptist Theological Seminary, whose devotion to rigorous scholarship for the sake of Christ and his Bride has inspired my own academic passions. Thank you to my doctoral supervisor, Dr. John David Trentham, who endured this process with me through hurricanes, a career change, two moves, a marriage, and many other challenging life events. You have been a source of encouragement, direction, and much needed humor in times of need. Also, I am grateful to God for my brothers in our program cohort. You have all enriched my walk with Jesus.

Finally, I must express thanksgiving for the men and women with whom I am honored to walk the hard, sacred road of healing. Your courage inspires me, and I am humbled by the trust you have given me to work with you for your joy.

All glory be to God.

Jacob Earl Porter

Houston, Texas

May 2019

## CHAPTER 1

### INTRODUCTION

This study examines the relevance and potential application of recent findings in the field of affective social neurobiology, also known as interpersonal neurobiology, by institutions of Christian higher education, specifically in their efforts at student formation. The 1990s, known now as “The Decade of the Brain,” saw a production of research on the structure and functioning of the brain that has exponentially increased our understanding of this most complex of organs.<sup>1</sup> With advances in medical technologies such as the fMRI, neuroscientists can now watch the brain work, particularly in relationship to outside stimuli, including other people; this ability allows researchers to observe and measure the effects of interpersonal relationships as an intrapersonal experience in the brain of an individual.<sup>2</sup> Additional insights into the role of emotions as a shared experience of brain and body have also revolutionized our understanding of the human mind.<sup>3</sup> Though some research has been carried out on the implications of cognitive neuroscience for education, to date relatively little attention has been given to the subfield of affective social neurobiology, especially by Christian educators. As a starting point for research on the intersection of the fields of affective social neurobiology and student spiritual formation, this transdisciplinary multimethod study will utilize

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<sup>1</sup>Warren S. Brown, “Neurobiological Embodiment of Spirituality and Soul,” in *From Cells to Souls, and Beyond: Changing Portraits of Human Nature*, ed. Malcolm A. Jeeves (Grand Rapids: W.B. Eerdmans, 2004), viii.

<sup>2</sup>Warren S. Brown and Brad D. Strawn, *The Physical Nature of Christian Life: Neuroscience, Psychology, and the Church* (New York: Cambridge University Press, 2012), 31.

<sup>3</sup>Anthony Damasio, *Descartes’ Error: Emotion, Reason, and the Human Brain* (repr., New York: Penguin Books, 2005).



previously conducted qualitative studies of spiritual formation at Christian institutions of higher education for a grounded qualitative meta-analysis to develop hypotheses about the phenomenon of student spiritual formation that might be useful in a theory of the affective social neuroscience of spiritual formation.<sup>4</sup>

### **Introduction to the Research Problem**

Neuroscience as a field of study has grown rapidly, organizing into major branches, including behavioral, cognitive, developmental, and evolutionary neuroscience, as well as neurolinguistics, neurophysics, and neurophysiology, to name a small sampling of brain science subdisciplines. This study will focus exclusively on one of the branches of brain science that has emerged more recently: affective social neuroscience, also called interpersonal neurobiology or neuroaffective science.<sup>5</sup> Affective social neuroscience involves not only the central nervous system, composed of the brain and spinal cord, but also the autonomic nervous system, the nonconscious neuronal network that monitors the state of internal organs, regulates organ activity, registers emotional experience, and governs the experiences of relational attachments.<sup>6</sup> In sum, affective social neuroscience is the study of the neurophysiological mechanisms of both brain and body involved in the relational and emotive experiences of human beings. The research within this field confirms that human beings are fundamentally affective and relational creatures.<sup>7</sup>

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<sup>4</sup>The methodology of a transdisciplinary multimethod grounded qualitative meta-analysis will be outlined below. The goal of “developing hypotheses that might be useful” in the formulation of a general theory is modeled after the stated goal of Stall–Meadow’s 1998 ground meta-analysis. See Celia Stall-Meadows, “Grounded Meta-Analysis of Qualitative Case Study Dissertations in Distance Education Pedagogy” (Ed.D. diss., Oklahoma State University, 1998), 71–72.

<sup>5</sup>Daniel J. Siegel, *The Developing Mind: How Relationships and the Brain Interact to Shape Who We Are*, 2<sup>nd</sup> ed. (New York: The Guilford Press, 2015). Though some separate social neuroscience from affective neuroscience, the work of researchers such as Siegel has demonstrated the intricate connections of the these two realms of brain science.

<sup>6</sup>Stephen W. Porges, *The Polyvagal Theory: Neurophysiological Foundations of Emotions, Attachment, Communication, and Self-Regulation* (New York: W. W. Norton & Company, 2011).

<sup>7</sup>Mary Helen Immordino-Yang, *Emotions, Learning, and the Brain: Exploring the Educational*

Much has been written applying brain science to education and learning.<sup>8</sup> However, most of these works originate in the realm of cognitive neuroscience, looking primarily at factors affecting learning and explicit memory. Less has been written applying the findings of affective social neuroscience to education, though some important research has been published.<sup>9</sup> Not yet present in the literature is engagement of findings from affective social neurobiology by distinctively Christian educators who seek to understand the implications of this research for student formation, particularly spiritual formation.

### **Need for Study**

Christian higher education institutions often articulate a mission to see students develop a worldview and affections shaped by the truths of the Christian faith.<sup>10</sup> Affective social neuroscience now gives insights into the biological mechanisms behind how humans process and develop responses to both cognitive and sensory data, especially in relational contexts.<sup>11</sup> Though often offered by scientists who embrace an evolutionary framework incompatible with the Christian faith, the findings of affective social

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*Implications of Affective Neuroscience* (New York: W. W. Norton & Company, 2015), 28.

<sup>8</sup>See, for example, Peter C. Brown, Henry L. Roediger III, and Mark A. McDaniel, *Make It Stick: The Science of Successful Learning* (Cambridge, MA: Belknap Press, 2014); Susan A. Ambrose et al., *How Learning Works: Seven Research-Based Principles for Smart Teaching* (San Francisco: Jossey-Bass, 2010).

<sup>9</sup>Examples include Louis J. Cozolino, *The Social Neuroscience of Education: Optimizing Attachment and Learning in the Classroom*, Norton Books in Education (New York: W. W. Norton & Company, 2013); Kirke Olson and Louis Cozolino, *The Invisible Classroom: Relationships, Neuroscience and Mindfulness in School*, Norton Books in Education (New York: W.W. Norton & Company, 2014); and Mary Helen Immordino-Yang, *Emotions, Learning, and the Brain: Exploring the Educational Implications of Affective Neuroscience* (New York: W. W. Norton & Company, 2015).

<sup>10</sup>Gary Scott Smith, "The Mission of Christian Colleges Today," in *Faith, Freedom, and Higher Education: Historical Analysis and Contemporary Reflections*, ed. P. C. Kemeny (Eugene, OR: Wipf & Stock Publishers, 2013); James K. A. Smith, *Desiring the Kingdom: Worship, Worldview, and Cultural Formation* (Grand Rapids: Baker Academic, 2009). Scott argues for the formation of worldview as an end for Christian higher education institutions, whereas Smith argues worldview is not a sufficient target, but rather educators must aim for the heart's affections.

<sup>11</sup>Siegel, *The Developing Mind*, 48.

neurobiological research present conclusions about the nature of humans and the dynamics of human development that align with Christian theological anthropology.<sup>12</sup> Already, many have begun exploring the spiritual implications of this research, both inside and outside the Christian tradition.<sup>13</sup> Lacking, however, is an assessment of how these findings may be brought to bear upon curriculum, program design, or student life initiatives in Christian higher education contexts.

### **Benefit of Study**

This study is beneficial in at least four ways. First, this study provides a meta-analysis of previously conducted qualitative research on spiritual formation at Christian institutions of higher education, research which does not currently exist in the literature. Second, this study outlines theories of spiritual formation emerging from the data and analyzes them in light of current affective social neuroscience research, another current gap in the literature.<sup>14</sup> Third, this study provides much needed transdisciplinary scholarship distinctly Christian in nature. As Eric Johnson has argued, Christian scholars are in need of and ought to be compelled to produce “a unique scientific body of

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<sup>12</sup>This assertion will be substantiated in chap. 2.

<sup>13</sup>Damasio, *Descartes' Error*; Brown, “Neurobiological Embodiment of Spirituality and Soul”; Andrea Hollingsworth, “Implications of Interpersonal Neurobiology for a Spirituality of Compassion,” *Zygon* 43, no. 4 (December 2008): 837–60; Carlos Fayard, Melissa J. Perea, and Antonia Cioica, “Love the Lord with All Your Mind: Explorations on a Possible Neurobiology of the Experience of God and Some Implications for the Practice of Psychotherapy,” *Journal of Psychology and Christianity* (July 1, 2009): 141–48; E. Mohandas, “Neurobiology of Spirituality,” *Mens Sana Monographs* 6, no. 1 (January 2008): 63–80; Thomas M. Crisp, Steven L. Porter, and Gregg Ten Elshof, eds., *Neuroscience and the Soul: The Human Person in Philosophy, Science, and Theology* (Grand Rapids: William B. Eerdmans Publishing Company, 2016); Augustin Meier, Thomas St. James O'Connor, and Peter L. VanKatwyk, eds., *Spirituality and Health: Multidisciplinary Explorations* (Waterloo, ON: Wilfred Laurier University Press, 2005); James M. Houston, “The Future of Spiritual Formation,” *Journal of Spiritual Formation & Soul Care* 4, no. 2 (September 2011): 131–39; James B. Ashbrook and Carol Rausch Albright, *The Humanizing Brain: Where Religion and Neuroscience Meet* (Cleveland, OH: Pilgrim Press, 1997); Brown and Strawn, *The Physical Nature of Christian Life*; David E. Comings, “The Neurobiology, Genetics and Evolution of Human Spirituality The Central Role of the Temporal Lobes,” *NeuroQuantology* 8, no. 4 (December 2010): 478–94.

<sup>14</sup>John W. Creswell, *Qualitative Inquiry and Research Design: Choosing among Five Approaches*, 3<sup>rd</sup> ed. (Los Angeles: SAGE Publications, 2012), 106.

Christian psychological discourse.”<sup>15</sup> Finally, it presents the findings of affective social neuroscience and their relationship to Christian theological anthropology and spiritual formation in such a way that Christian leaders without extensive training in brain science or social science research will begin to understand the applicability of these findings to their work as disciple-makers.

### **Current Status of the Problem**

When the explosion of research on brain science first erupted in the 1990s, some Christian academics quickly began attempts to appropriate and integrate findings from neuroscience with Christian theology.<sup>16</sup> One of the early works to explain the intersection of neuroscience and religion was Ashbrook and Albright’s 1997 book, *The Humanizing Brain*.<sup>17</sup> This book received mixed reviews from scientific and theological academics, with critique growing increasingly harsher as newer research seemed to undermine some of the basic claims of Ashbrook and Albright. In 2004, Malcolm Jeeves edited *From Cells to Souls—And Beyond*, a collection of essays from scholars of many disciplines. In this volume, the social implications of human neurobiology for an understanding of theological anthropology are considered.<sup>18</sup>

Since this time, many scholars have written on the implications of neuroscientific research for a Christian understanding of personhood, the nature of the soul, and the relationship between the material and immaterial parts of humanity. A large

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<sup>15</sup>Eric L. Johnson, *Foundations for Soul Care: A Christian Psychology Proposal* (Downers Grove, IL, IL: InterVarsity Press, 2007), 250.

<sup>16</sup>This section presents an overview of the existing literature relevant to the research problem. A more extensive literature review is provided in chap. 2.

<sup>17</sup>Ashbrook and Albright, *The Humanizing Brain*.

<sup>18</sup>Brown, “Neurobiological Embodiment of Spirituality and Soul,” 68, writes, “I believe that most, if not all, of the critical properties that have been subsumed within the Judeo-Christian concept of a soul can be captured in the concept of personal relatedness, particularly if one admits the possibility of relatedness to God. In this view, we become persons and 'souls' as we experience ourselves within a relational network of God and other human beings.”

portion of this discussion has explored these questions through the discipline of philosophy.<sup>19</sup> A representative work from philosophy can be found in William Hasker's essay, "Do My Quarks Enjoy Beethoven?"<sup>20</sup> Hasker's essay critiques the theory of emergent material persons (EMP), which claims that personhood, and especially consciousness, is entirely the result of biochemical reactions taking place in the brain and body, with no separate, spiritual reality involved. This position in turn leads to questions on determinism and the nature of human freedom in which its proponents must turn to the realm of quantum physics in an attempt to preserve their wholly material view of human consciousness alongside any meaningful understanding of human free will.<sup>21</sup> Using well-established concepts in the philosophy of science, such as functional simplicity, Hasker unravels EMP to show that *something* must exist in the relatively large, spacious gaps between the matter that composes our bodies. This ongoing debate works both to engage more Christian scholars with neuroscience research and to influence how non-Christian scholars interpret this research, leaving room for questions of a spiritual nature in the dialogue.

Christian philosophers have not been alone in this conversation with neuroscience; theologians and biblical scholars are also participating.<sup>22</sup> One leading thinker on the subject is Joel Green of Fuller Theological Seminary, a theologian who has written extensively on the implications of neurobiological research for our understanding

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<sup>19</sup>Damasio, *Descartes' Error*; Crisp, Porter, and Ten Elshof, *Neuroscience and the Soul*; Brown and Strawn, *The Physical Nature of Christian Life*; Meier, O'Connor, and VanKatwyk, *Spirituality and Health*.

<sup>20</sup>William Hasker, "Do My Quarks Enjoy Beethoven?" in *Neuroscience and the Soul: The Human Person in Philosophy, Science, and Theology*, ed. Thomas M. Crisp, Steven L. Porter, and Gregg Ten Elshof (Grand Rapids: William B. Eerdmans Publishing Company, 2016), 13–40.

<sup>21</sup>Hasker, "Do My Quarks Enjoy Beethoven?" 20.

<sup>22</sup>Crisp, Porter, and Ten Elshof, *Neuroscience and the Soul*; Colleen Shantz, *Paul in Ecstasy: The Neurobiology of the Apostle's Life and Thought* (Cambridge: Cambridge University Press, 2009); Brown and Strawn, *The Physical Nature of Christian Life*; Malcolm A. Jeeves, ed., *From Cells to Souls, and Beyond: Changing Portraits of Human Nature* (Grand Rapids: W.B. Eerdmans, 2004).

of theological anthropology.<sup>23</sup> Green’s work has skillfully challenged both traditional theological thinking that insists on distinct physical and spiritual parts composing human beings and the materialist conclusions of some neuroscientists, proposing understandings of personhood that bring together rigorous evangelical biblical scholarship with science. One of the more creative works by a theologian seeking serious engagement with neurobiology is *Paul in Ecstasy*, by Colleen Shantz.<sup>24</sup> This brave, if not audacious, book proposes neurobiological explanations for the accounts of religious experience recorded in Paul’s writings.

Christian academics and popular writers are turning their attention to the implications of neuroscience for Christian discipleship.<sup>25</sup> In 2014, John Ortberg presented an overview of the field of neuroscience with application for Christian discipleship at a popular level, focusing mostly on the power of habit over willpower.<sup>26</sup> Blevins has argued that what neuroscientists are learning about the particular ways in which adolescent minds develop provides grounds for a paradigm shift in how adults who work with youth understand their strong impulses and reasoning (or lack thereof).<sup>27</sup> More recently, Trentham and Estep overlaid the neuroscientific research of Fischer atop Perry’s model of epistemological development, arguing for an alignment among the findings from these different academic fields and suggesting implications for the education and

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<sup>23</sup>Joel B. Green, “What Does It Mean to Be Human?” in *From Cells to Souls, and Beyond: Changing Portraits of Human Nature*, ed. Malcolm A. Jeeves (Grand Rapids: W.B. Eerdmans, 2004), 179–98; Joel B. Green, ed., *What about the Soul?* (Nashville, TN: Abingdon Press, 2004).

<sup>24</sup>Shantz, *Paul in Ecstasy*.

<sup>25</sup>See, for example, Laura Barwegen and Dan Hamil, “Wired for Change: What Neuroscience Taught Me about Renewing My Mind,” *Discipleship Journal* (February 1, 2009): 23–27; Fayard, Pereau, and Ciovica, “Love the Lord with All Your Mind”; Houston, “The Future of Spiritual Formation”; John Ortberg, “Can Neuroscience Help Us Disciple Anyone? Brain Science and the Renewal of Your Mind,” *Leadership Journal* (Summer 2014): 18–22.

<sup>26</sup>Ortberg, “Can Neuroscience Help Us Disciple Anyone?”

<sup>27</sup>Dean G. Blevins, “Brains on Fire: Neuroscience and the Gift of Youth,” *Journal of Youth Ministry* 12, no. 2 (Spring 2014): 7–24.

discipleship of young adults.<sup>28</sup> One of the most thorough and more recent treatments on the implications of neurobiology on the Christian life is Curt Thompson's work, which skillfully integrates brain science research with a number of practical issues of Christian discipleship.<sup>29</sup>

Christian counselors and psychologists are also unpacking brain science research.<sup>30</sup> Most of the literature cited above draws from cognitive or developmental neuroscience. The fields of Christian counseling and Christian psychology have paid the most attention specifically to the work being done in social affective neuroscience and interpersonal neurobiology. In a brief article, Clinton and Sibcy outline how the emerging findings of interpersonal neurobiology have profound implications for the practice of Christian counseling, especially by emphasizing the power of relationship to foster transformation at a much deeper level than that possible merely through cognitive interventions or psycho-education.<sup>31</sup>

Lacking from the current literature are specific applications or attempts to integrate the findings of affective social neurobiology to the formative experience of young adults. The brains of those in late adolescence or early adulthood are at a pivotal point in their development.<sup>32</sup> Those in higher education contexts are stewards of great opportunities to give shape to these still-forming minds, yet little attention has been

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<sup>28</sup>John David Trentham and James Riley Estep, "Early Adult Discipleship at the Intersection of Neurological and Phenomenological Research," *The Journal of Discipleship & Family Ministry* 5, no. 2 (Summer 2016): 7–32.

<sup>29</sup>Curt Thompson, *Anatomy of the Soul: Surprising Connections Between Neuroscience and Spiritual Practices That Can Transform Your Life and Relationships* (Carol Stream, IL: Tyndale Momentum, 2010).

<sup>30</sup>The literature from the fields of counseling and psychology are extensively considered in chap. 2.

<sup>31</sup>Tim Clinton and Gary Sibcy, "Christian Counseling, Interpersonal Neurobiology, and the Future," *Journal of Psychology & Theology* 40, no. 2 (2012): 141–45.

<sup>32</sup>Trentham and Estep, "Early Adult Discipleship," 13.

given to brain research beyond the cognitive implications for education. We now understand that the implicit learning happening at an emotional, often nonconscious level and through social, interpersonal means reaches deeper than mere cognitive learning in many ways.<sup>33</sup> For this reason, leaders and teachers in Christian higher education contexts should make use of affective social neurobiological research in their efforts toward student formation.

### **Foundations of the Study**

This thesis is based upon certain theological and philosophical foundations. These premises certainly overlap in their concern, each dealing with how we know and understanding of the nature of human beings as created, both body and soul, in the image of God and embedded within relationships with God, other humans, and creation. Though these foundations will be further developed in the literature review of chapter 2, a brief introduction here will make clear certain assumptions in this study.

### **Theological Foundations**

As a starting point, this study holds that all creation was made by God for the purpose of his own glory. While creation itself testifies to God's nature and being (Ps 19), God is most clearly known through his Son, Jesus Christ, as revealed in the Bible (John 1:14). Jesus Christ is not only the Lord and Savior of the world, but he is also the preeminent display of flourishing humanity.<sup>34</sup> The Person of the incarnate Christ manifests God's vision for all that humankind could be. Jesus Christ, in this sense, is the most human person who has ever lived. Created in God's image (Gen 1:27), human beings are whole–embodied–souls (Gen 2:7) whose being is embedded in relational

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<sup>33</sup>Siegel, *The Developing Mind*, 51.

<sup>34</sup>Jonathan T. Pennington, *The Sermon on the Mount and Human Flourishing: A Theological Commentary* (Grand Rapids: Baker Academic, 2017), 294.



community.<sup>35</sup> The *imago Dei*, though marred by sin, was not entirely lost in sinful man (Gen 9:6). Through Christ, God is reconciling the world to himself and renewing his image in redeemed humanity by conforming them to the image of Christ (Rom 8:28). Indeed, believers in Jesus, indwelt by his Spirit, have a new identity “in Christ.”

Believers’ new identity “in Christ” is not merely a forensic issue of how they are labeled or categorized within the mind of God, as though “in Christ” is similar to the doctrine of justification as described by Luther’s *simul Justus et peccator*.<sup>36</sup> This union is a reality, mystical yet concrete. The depths of this identification with Jesus extend from eternity past, in which believers were “chosen in him before the foundation of the world” (Eph 1:5), into eternity future, in which believers are assured of a future glorification (Rom 8:30) and inheritance (Rom 8:17).

The implications of this union with Christ are myriad, yet for the purposes of this study two stand out. The first implication is that with the new identity “in Christ,” the believer in Jesus finds his or her story placed within the greater context of the story of Christ and creation. Indeed, this “in Christ” reality so spiritually unites the believer to the Lord Jesus that the believer in some way truly died with Christ (Rom 6:6), rose with Christ (Eph 2:5), ascended to the heavenly places with Christ (Eph 2:6), and presently lives through Christ (Gal 2:20). One will receive a glorious inheritance with him as one also suffers with him (Rom 8:17). The one redeemed by Jesus, whose personal history has been subsumed under the history of redemption, can rest in the knowledge that his “life is hidden with Christ in God” (Col 3:3).

Another relevant implication of being “in Christ” for this study is that believers become a part of his “body,” the church. The church comes together as the body of

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<sup>35</sup>Brown and Strawn, *The Physical Nature of Christian Life*, 9.

<sup>36</sup>Martin Luther, *Galatians*, Crossway Classic Commentary Series, (Wheaton, IL: Crossway, 1998), 134.

Christ, his very presence in the world. Local churches are expressions and manifestations of Christ to one another within the believing community (Matt 25:40) and to the world (Eph 1:22–23). Christ so identifies with those who believe in him that persecution against them is a personal act against him (Acts 9:4). As part of God’s chosen people, believers have Christ as their representative head (Rom 5:17). Christ not only acts to fulfill the law in a way the nation of Israel failed to do, but Christ also sets a pattern for how Christians today are to live and gathers them up into the story of God, his chosen people, and their Messiah as revealed in redemption history.<sup>37</sup> In other words, believers in Jesus Christ are not only spiritually united to him, but are also united to a community that finds its identity in him. Both the individual and cultural history of the believer in Jesus Christ has been subsumed under the broader story of redemptive history, with the life, death, and resurrection of Jesus as its preeminent focus.

This theological foundation is important because it sets out a fundamental understanding of human persons as a whole—embodied—souls embedded in relationships whose identities are bound up in their stories. Furthermore, by grace through faith in Christ, humans can find themselves united to him, embedded within his body, among his people, and living out his story.

### **Philosophical Foundations**

The Greek philosopher Plato (BC 428–348) taught that everything we encounter in the material world is in reality a mere reflection of an eternal form that exists in the real world.<sup>38</sup> Applied to objects, animals, and people alike, this *cosmological dualism* believes all that we can see, touch, taste, smell, and hear are only shadows of ideal forms that exist in the eternal spiritual realm, and these ideal forms are more real

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<sup>37</sup>James M. Hamilton, *God’s Glory in Salvation through Judgment: A Biblical Theology* (Wheaton, IL: Crossway, 2010).

<sup>38</sup>Brown and Strawn, *The Physical Nature of Christian Life*, 15.

and important than those we currently engage.<sup>39</sup> Plato is among the first prominent philosophers to argue for a nonmaterial soul separate from the physical body. Plato's philosophy influenced centuries of thinkers who followed, including Augustine of Hippo (354–430), who viewed the body as being tainted by sin and the soul as being superior to the body.<sup>40</sup> Following Augustine, the Enlightenment philosopher Rene Descartes (1596–1650) famously postulated, “I think, therefore I am,” identifying the “thinking thing” within humans to be the soul, separate from the body, through which comes knowledge of the self and of God.<sup>41</sup> This strain of philosophy that adheres to *anthropological dualism*—believing that humans are comprised of distinct bodies and souls, with the immaterial in some way being more “real” or more closely identified with the “true” identity of the individual—has largely become an assumption in Western philosophy and religion.<sup>42</sup>

In recent decades, often as a result of neurophysiological research on matters such as the nature of the mind and consciousness, the reign of Cartesian mind–body dualism has been challenged.<sup>43</sup> One can also readily see the conflict between cosmological and anthropological dualism and the theological assumptions outlined above. The attempts to work out an alternative to the Cartesian formulation of mind–body dualism more compatible with contemporary findings from brain science are wide–ranging.<sup>44</sup> A detailed survey of alternative philosophies on human nature and personhood is beyond the scope of this study, but a brief survey of the broad categories in which these

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<sup>39</sup>N. T. Wright, *The New Testament and the People of God*, Christian Origins and the Question of God (Minneapolis: Fortress Press, 1992), 252–53.

<sup>40</sup>Brown and Strawn, *The Physical Nature of Christian Life*, 15.

<sup>41</sup>Brown and Strawn, *The Physical Nature of Christian Life*, 16.

<sup>42</sup>Wright, *The New Testament and the People of God*, 252–53.

<sup>43</sup>Crisp, Porter, and Ten Elshof, *Neuroscience and the Soul*, 1.

<sup>44</sup>See, for example, Crisp, Porter, and Ten Elshof, *Neuroscience and the Soul*; and Jeeves, *From Cells to Souls, and Beyond*.

philosophies can be organized will provide sufficient orientation to place this study within the current debate.

Four broad categories for answering the question of anthropological dualism include *reductive materialism*, *radical dualism*, *wholistic dualism*, and forms of *monism*.<sup>45</sup> Reductive materialism occupies one end of the spectrum of view, claiming the physical sciences are entirely sufficient to explain the whole of human nature and experience. Radical dualism is found on the opposite end, arguing the real essence of a person is found in a soul which has no necessary relationship to the body. Between these two more extreme positions are wholistic dualism and various forms of monism. Wholistic dualism suggests essentially distinct but functionally unified material and immaterial elements making up humans. Monism denies the existence of a separate, non-material substance or “part” of humans, yet also denies that material nature alone can account for human nature and experience. This research study will proceed from the position of wholistic dualism, which will be more fully argued in the literature review of chapter 2. However, some forms of monism could be assumed without affecting the research questions or the findings that will be presented.

### **Purpose of the Study**

The purpose of this study is to explore the extent to which the phenomenon of student spiritual formation corresponds to the phenomenon of human development found in affective social neurobiology.

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<sup>45</sup>Joel B. Green, *Body, Soul, and Human Life: The Nature of Humanity in the Bible*, Studies in Theological Interpretation (Grand Rapids: Baker Academic, 2008), 30–31.

## Research Questions

Informed by current literature on affective social neurobiology and using grounded theory to analyze established case studies, the following research questions will guide the study:

1. What does a meta-analysis of qualitative studies reveal about the phenomenon of student spiritual formation at Christian higher education institutions?
2. How do emerging theories on student spiritual formation reflect the growing body of knowledge about human development from affective social neurobiology?

## Delimitations

1. This research was delimited to the emerging theories of spiritual formation within the Christian higher education institutions represented in the selected case studies, as opposed to within other academic institutions, local churches, missions organizations, other parachurch organizations, etc.
2. This research focused specifically on application of and engagement with affective social neurobiology, rather than cognitive or developmental neuroscience, for student spiritual formation in Christian higher education contexts.

## Definitions

*Affect*: The conscious or nonconscious awareness of the dynamic state of the body's vital organs registered and mapped by the mind.<sup>46</sup>

*Affective social neurobiology*: The neuroscientific subdiscipline that involves the roles of both the central and autonomic nervous systems in the relational and emotive experiences of human beings.<sup>47</sup>

*Affect regulation theory*: A developmental theory that understands a person's mental states to be organized and driven by affective states; the theory posits that healthy regulation of affect is foundational for human flourishing and dysregulation of affect is foundational to all developmental disorders.<sup>48</sup>

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<sup>46</sup>Daniel Hill, *Affect Regulation Theory: A Clinical Model*, The Norton Series on Interpersonal Neurobiology (New York: W.W. Norton & Company, 2015), 6.

<sup>47</sup>Porges, *The Polyvagal Theory*.

<sup>48</sup>Allan N. Schore, *The Science of the Art of Psychotherapy*, Norton Series on Interpersonal

*Anthropological dualism:* The philosophical or theological position that claims humanity is made up of both material and immaterial parts of distinct substance, with the common assumption that the immaterial is in some way superior to the material.<sup>49</sup>

*Arousal:* The dimension of affect that accounts for the level of energy or intensity registered in the body.<sup>50</sup>

*Biophysiological order:* That order of human existence consisting of the material body and brain, comprising the foundational platform for human life and higher level functioning in this age.<sup>51</sup>

*Christian higher education institution:* A postsecondary educational institution based upon an identity rooted in the Christian faith whose objective is to promote student learning and formation of a Christian worldview through its curricula.<sup>52</sup>

*Christian practices:* Activities that, when engaged regularly, form a distinctly Christian way of life, meeting fundamental needs established by God for humanity and creation, and cultivate changes leading to greater conformity with the Christian faith.<sup>53</sup>

*Cosmological dualism:* The philosophical or theological position claiming the universe is made up of distinct material and immaterial parts, with the presumption that the immaterial is in some way superior to the material.<sup>54</sup>

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Neurobiology (New York: W. W. Norton & Company, 2012); Schore, *Affect Regulation & the Repair of the Self*, Norton Series on Interpersonal Neurobiology (New York: W.W. Norton & Company, 2003); Schore, *Affect Dysregulation & Disorders of the Self*, Norton Series on Interpersonal Neurobiology (New York: W.W. Norton, 2003); Schore, “Relational Trauma and the Developing Right Brain: An Interface of Psychoanalytic Self Psychology and Neuroscience,” in *The Science of the Art of Psychotherapy*, Norton Series on Interpersonal Neurobiology (New York: W. W. Norton & Company, 2012), 52–70.

<sup>49</sup>Wright, *The New Testament and the People of God*, 252–253.

<sup>50</sup>Hill, *Affect Regulation Theory*, 2.

<sup>51</sup>Johnson, *Foundations for Soul Care*, 335.

<sup>52</sup>John David Trentham, “Christian Higher Education in Focus: An Introduction and Proferring through Five Lenses,” *Journal of Christianity and Higher Education*, forthcoming.

<sup>53</sup>Dorothy C. Bass, preface to *Practicing Our Faith* (Minneapolis: Fortress Press, 2019), xiii.

<sup>54</sup>Wright, *The New Testament and the People of God*, 252–53.

*Ethica orderl*: The order of human existence consisting of an individual's sense of personal agency, conscience, volition, creativity, love of neighbor and communality, and capacity for virtue, vice, and character.<sup>55</sup>

*Monism*: An anthropological philosophy on the composition of human beings that denies the existence of a separate, non-material substance or "parts" of humans, yet also denies that material nature alone can account for human nature and experience.<sup>56</sup>

*Multimethod research*: A research strategy that employs multiple types of either qualitative or quantitative data collected and utilized for analysis within one study.<sup>57</sup>

*Polyvagal theory*: A theory of the neurobiology of social engagement and threat response, whereby the regulation of the heart is linked to affective experience, emotional expression, facial gestures, vocal tone, and social signaling in response to others.<sup>58</sup>

*Primary affect*: The body's nonverbal representation of its sensorimotor, physiological felt sense registered through the two dimensions of arousal and hedonic tone.<sup>59</sup>

*Psychosocial order*: That order of human existence consisting of immaterial schema and scripts evolving from social interactions and internalized within an individual's mind, providing a sense of self- and other identity.<sup>60</sup>

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<sup>55</sup>Johnson, *Foundations for Soul Care*, 340–44.

<sup>56</sup>Green, *Body, Soul, and Human Life*, 31.

<sup>57</sup>Sharlene Hesse-Biber and R. Burke Johnson, eds., *The Oxford Handbook of Multimethod and Mixed Methods Research Inquiry* (Oxford: Oxford University Press, 2015), xxxix.

<sup>58</sup>Porges, *The Polyvagal Theory*.

<sup>59</sup>Hill, *Affect Regulation Theory*, 5.

<sup>60</sup>Johnson, *Foundations for Soul Care*, 336–37.

*Radical dualism:* An anthropological philosophy on the composition of human beings arguing the real essence of a person is found in an immaterial soul which has no necessary relationship to the physical body.<sup>61</sup>

*Reductive materialism:* An anthropological philosophy on the composition of human beings claiming the physical sciences are entirely sufficient to explain the whole of human nature and experience.<sup>62</sup>

*Spiritual order:* That order of human experience that deals with matters of the soul, ultimate significance, and that for the Christian is an eschatological reality.<sup>63</sup>

*Spiritual formation:* A phenomenological dimension of Christian discipleship, whereby believers, through participation in a Spirit-driven process, are becoming more like Christ as they mature in their relationship with God through the intentional nurturing of the Christian ways and means of life.<sup>64</sup> In this study, spiritual formation will most often refer to this explicitly Christian understanding rather than the more general process experienced by all humans.<sup>65</sup>

*Transdisciplinarity:* Both a philosophy of and method for scholarship, whose Christian expression is based on distinctly Christian metaphysics and guided by Christian theology, philosophy, and biblical studies, with the aim of creating an integrated, unified body of knowledge, understanding, and practice made up of the concepts and methodologies of multiple disciplines.<sup>66</sup>

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<sup>61</sup>Green, *Body, Soul, and Human Life*, 31.

<sup>62</sup>Green, *Body, Soul, and Human Life*, 32.

<sup>63</sup>Johnson, *Foundations for Soul Care*, 345.

<sup>64</sup>John David Trentham, “Distinguishing Discipleship and Spiritual Formation” (unpublished paper, 2019).

<sup>65</sup>The non-Christian experience of spiritual formation will be discussed in the literature review of chap. 2.

<sup>66</sup>Eric L. Johnson, and Craig G. Bartholomew, “Transdisciplinarity: A Proposal for the Renewal of Christian Scholarship in the 21st Century,” The Paideia Centre for Public Theology, accessed



*Valence*: The dimension of affect that accounts for the degree to which the felt sense coming from the body is pleasant or unpleasant; also called *hedonic tone*.<sup>67</sup>

*Wholistic dualism*: An anthropological philosophy on the composition of human beings claiming the existence of essentially distinct but functionally unified material and immaterial elements making up humans.<sup>68</sup>

### **Procedural Overview**

This project is a transdisciplinary multimethod study, considering data from distinct scholarly disciplines and making use of two qualitative methodologies. Transdisciplinary research focuses on complex questions that cannot be answered by any one discipline and require a formalized approach of integration between the insights of two or more disciplines.<sup>69</sup> Eric Johnson and Craig Bartholomew present a strong case, detailed in chapter 3 on methodology, that transdisciplinarity presents a path forward for robust, serious, and truly Christian scholarship.<sup>70</sup> Whereas mixed method research refers specifically to the use of both qualitative and quantitative procedures within one study, multimethod research involves the use of two or more methods within either the qualitative or quantitative categories of research.<sup>71</sup> This research will utilize two qualitative methods: text-based analysis and grounded theory.<sup>72</sup> A textual methodology

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May 23, 2014, <http://christianpsych.org/media/transdisciplinarity.pdf>.

<sup>67</sup>Barrett, *How Emotions Are Made*, 72.

<sup>68</sup>Green, *Body, Soul, and Human Life*, 31.

<sup>69</sup>Hesse-Biber and Johnson, *Oxford Handbook of Multimethod and Mixed Methods*, 129.

<sup>70</sup>Johnson and Bartholomew, "Transdisciplinarity."

<sup>71</sup>John W. Creswell, *A Concise Introduction to Mixed Methods Research* (Los Angeles: SAGE Publications, 2014), 2–3; M. Teresa Anguera et al., "Revisiting the Difference between Mixed Methods and Multimethods: Is It All in the Name?" *Quality & Quantity* 52, no. 6 (February 9, 2018): 2757–70.

<sup>72</sup>For a description of text-based analysis as qualitative research, see Sara McKinnon, "Text-Based Approaches to Qualitative Research," in *The International Encyclopedia of Media Studies*, ed. Fabienne Darling-Wolf and Angharad N. Valdivia (Malden, MA: Wiley Blackwell, 2014).

proposed by Eric Johnson for distinctly Christian engagement with scientific texts will be employed in the review and interaction with precedent literature, as well as in the evaluation and application of the study's findings. A method for conducting a grounded qualitative meta-analysis refined by Stall-Meadows will be adopted for the research proper.

In the literature review of chapter 2 and in the analysis of the results in chapter 5, relevant precedent literature will be presented, analyzed, and evaluated via Eric Johnson's proposed process for constructing transdisciplinary scholarship that is truly and thoroughly "Christian" in nature.<sup>73</sup> Johnson's process "translates" texts originating from non-Christian academic communities for the purpose of Christian scholarship "in such a way that the Christian tradition is itself strengthened and enriched, and not diluted or compromised."<sup>74</sup> Johnson's use of "translation" does not refer to the literal linguistic task of reproducing a work in a language other than that in which it was first written, but to a complex reading of a text from another intellectual community (the "second dialect," in Johnson's terminology) for the purpose of appropriating its content for use in one's own intellectual community (the "native dialect").<sup>75</sup> According to Johnson, the reader who is an able translator of non-Christian texts for Christian scholarship has first saturated himself in the canon of Scripture and the classic texts of the Christian tradition, becoming

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<sup>73</sup>Johnson, *Foundations for Soul Care*. See also, Johnson, and Bartholomew, "Transdisciplinarity." Johnson gives credit to MacIntyre for the basis of his process of translation; see Alasdair MacIntyre, *Whose Justice? Which Rationality?* (Notre Dame, IN: University of Notre Dame Press, 1988).

<sup>74</sup>Johnson, *Foundations for Soul Care*, 221.

<sup>75</sup>Johnson distinguishes this task of translation from the more commonly utilized process of integration, which is more akin to a novice word-for-word translation in danger of carrying the assumptive underpinnings of one community into another. Integration starts with a paradigm that sees two bodies of texts, some sacred and some secular, and seeks to fit them together. Translation, as Johnson envisions the task for Christian scholarship, begins with a thoroughly biblical worldview, rejecting the notion that any truth exists which is not purposed for God's glory. See Johnson, and Bartholomew, "Transdisciplinarity."

a master of his native tongue. With this competence and background knowledge, the task of translation involves five steps:<sup>76</sup>

1. *Comprehension*. This first step involves reading the text to be translated in such a way as to understand, as best as possible, the author's intended meaning of the text. Sufficient training and familiarity with the text and its "secondary dialect"—including scientific terms, concepts, and assumptions—are required for this first step.
2. *Evaluation*. Utilizing hermeneutics of both trust and suspicion, the text is read in light of one's native tongue. A hermeneutic of trust proceeds on the assumption that the author of the text in good faith seeks to report something of reality, to describe something real, and the Christian translator desires to learn about this reality. A hermeneutic of suspicion simultaneously understands that authors and researchers make errors, even in the most scientific of endeavors, and makes salient those assumptions and connotations incompatible with the native dialect.
3. *Translation proper*. The actual translation of a secondary dialect text into one's native tongue involves four types of conceptual movement:
  - a. Those concepts or terms that are grounded in reality, have no direct correspondence in the primary tongue, and do not pose challenges to the primary tongue's framework or worldview may be *transliterated*.
  - b. Concepts or terms from the second tongue with corresponding language in the first are candidates for *same-saying* or *paraphrasing*. When different words from the two languages seem to point to the same reality, they can be used interchangeably—though much caution is required on the part of the translator not to inadvertently import conflictual meaning or assumptions into the primary tongue.
  - c. If differences in worldview assumptions between the two dialects are sizeable and deemed misleading or false according to the first dialect, the translator may use "*interpretive glosses and explanations*. . . in light of the meaning-system of the native tongue."<sup>77</sup>
  - d. Should material from the second dialect be found incommensurable with the first, the translator may offer a *critique* and/or *substitution* for it.<sup>78</sup>

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<sup>76</sup>Johnson, *Foundations for Soul Care*, 231–39.

<sup>77</sup>Johnson, *Foundations for Soul Care*, 234.

<sup>78</sup>The following examples may help make these four translation options more clear: *Transliteration* is appropriate when dealing with more concrete physical realities, such as *autonomic nervous system* or the concept of *allostatic load*. An example of *paraphrasing* or *same-saying* can be seen in the correspondence between the New Testament's term for *suffering* and the overlapping concept of *stressors*. An *interpretive gloss* could be offered of the term *education*, explaining that the Bible understands formation to involve not only the mind, but also one's emotions and behaviors. Lastly, Maslow's concept of *self-actualization* should be deemed incompatible with a Christian framework and might be *critiqued* for its foundation in humanism and substituted with Christian concepts of sanctification

4. *Transposition.* Much modern scholarship, especially from the more scientific disciplines, is concerned only with the biological, psychological, and sociological dynamics of phenomena. The Christian translator must “take up” the textual material into higher realms of ethics and spirituality.
5. *Composition.* The Christian translator must produce a new text which both explicitly makes use of Scripture and relevant Christian classics and demonstrates enrichment benefiting Christian scholarship as a result of its incorporation of material from the works of the secondary dialect community.

The first three steps—comprehension, evaluation, and translation proper—will be executed in the literature review of chapter 2; the final two steps—transposition and composition—will be conducted in the analysis of research results in chapter 5.

The methodology of grounded qualitative meta-analysis proposed and utilized by Stall-Meadows will be followed in the research on student spiritual formation at Christian institutions of higher education.<sup>79</sup> Though meta-analyses in quantitative research have been conducted for some time, more recently attention has been turned to the development of methodology for meta-analyses within qualitative research.<sup>80</sup> Stall-Meadows proposed a method for qualitative meta-analysis in her doctoral dissertation, in which she implemented grounded theory processes for the analysis of previously established studies.<sup>81</sup> Since this time, she and others have continued to use this methodology for qualitative meta-analysis in fields ranging from consumer studies to education.<sup>82</sup>

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and even glorification.

<sup>79</sup>Stall-Meadows, “Grounded Meta-Analysis of Qualitative Case Study Dissertations in Distance Education Pedagogy”; Celia Stall-Meadows and Adrienne Hyle, “Procedural Methodology for a Grounded Meta-Analysis of Qualitative Case Studies,” *International Journal of Consumer Studies* 34, no. 4 (July 1, 2010): 412–18.

<sup>80</sup>Malcolm Tight, *Understanding Case Study Research: Small-Scale Research with Meaning* (Los Angeles: SAGE, 2017), 116–17.

<sup>81</sup>Stall-Meadows, “Grounded Meta-Analysis of Qualitative Case Study Dissertations in Distance Education Pedagogy.”

<sup>82</sup>Stall-Meadows and Hyle, “Procedural Methodology for a Grounded Meta-Analysis of Qualitative Case Studies”; Natalja Apanasovich, “Modes of Innovation: A Grounded Meta-Analysis,” *Journal of the Knowledge Economy* 7, no. 3 (September 1, 2016): 720–37; Audrey J. Styer, “A Grounded Meta-Analysis of Adult Learner Motivation in Online Learning from the Perspective of the Learner” (Ann

For this study, data from several established qualitative studies on student formation at Christian higher education institutions will be utilized. To date, no grounded qualitative meta-analysis has been conducted on this subject. One benefit of this methodology is that the use of data collected by different researchers helps to minimize potential researcher bias in the qualitative research process. Data from these studies will be coded and later analyzed utilizing the established grounded theory methodology of Corbin and Strauss.<sup>83</sup> Coded data will be used to find patterns, themes, explanations, and understandings relevant to the research questions by undergoing analysis via Dedoose, a web-based program for qualitative and mixed methods research developed by professors at UCLA.<sup>84</sup> The resulting themes and theories emerging from this analysis will then be evaluated and applied to the research questions.

### **Research Assumptions**

1. The authors and researchers of scientific reports outlining findings from the field of affective social neurobiology considered in this study are at least attempting to describe actual phenomena observed in the course of their studies.<sup>85</sup>
2. The data gathered in previously conducted qualitative studies provided accurate representations of the process of student spiritual formation at the institutions being studied.
3. Dedoose will be unbiased in its process of coding and analyzing the data from the case studies.

### **Summary**

Christian educators and administrators who find themselves entrusted with

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Arbor, MI: Capella University, 2007); Nora Dominguez, “Mentoring Unfolded: The Evolution of an Emerging Discipline” (Ph.D. diss, The University of New Mexico, 2012); M. Barth and I. Thomas, “Synthesising Case-Study Research: Ready for the next Step?” *Environmental Education Research* 18, no. 6 (2012): 751–64.

<sup>83</sup>Juliet Corbin and Anselm Strauss, *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*, 4th ed. (Los Angeles: SAGE Publications, Inc, 2014).

<sup>84</sup>Learn more about Dedoose at <http://www.dedoose.com>.

<sup>85</sup>For more on this “hermeneutic of trust,” see Johnson, *Foundations for Soul Care*, 232.

students during their pivotal transition into adulthood ought to be keenly interested in research on the ways these minds are formed at the level of implicit knowledge, beyond the merely cognitive. The findings within social affective neuroscience and interpersonal neurobiology make clear the power of relationship in the development of the brain's neural structure, the healing of past trauma, and the outworking of cognitive beliefs in consistent emotional and behavioral responses. This transdisciplinary study will begin to explore how the process of student spiritual formation as a phenomena can be understood neurobiologically, allowing the potential opportunity to improve the formation process by appropriating research from affective social neurobiology. These conclusion can be engaged and applied by leaders and educators of Christian higher education institutions to intentionally foster the development of Christlikeness in young adult students.

## CHAPTER 2

### PRECEDENT LITERATURE

The purpose of this study is to explore the extent to which the phenomenon of student spiritual formation corresponds to the phenomenon of human development found in affective social neurobiology. This chapter serves to provide a context for this study by defining the phenomenon of spiritual formation based upon precedent literature and by articulating a Christian transdisciplinary reading of research findings in affective social neurobiology with which the results of the grounded qualitative meta-analysis may be compared.

The first major section of this chapter expands upon the theological and philosophical assumptions upon which this study will be based. The second major section will review the body of literature on the phenomenon of spiritual formation, especially as it is experienced by students at Christian higher education institutions. The third major section of this chapter reviews literature from the field of affective social neurobiology utilizing the process for a truly Christian transdisciplinary “translation” outlined by Eric Johnson.<sup>1</sup>

This process, described more fully in chapter 1, begins with *comprehension* of a text of “secondary dialect” by understanding its author’s intended meaning. *Evaluation* follows, utilizing in parallel the dual hermeneutics of trust and suspicion to read a text in light of the foundational truths of Christianity. After evaluation, a text undergoes *translation proper*, in which concepts are moved into the “native tongue” through the use

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<sup>1</sup>Eric L. Johnson, *Foundations for Soul Care: A Christian Psychology Proposal* (Downers Grove, IL: InterVarsity Press, 2007), 231–39.

of transliteration, paraphrasing, explanation, or critique and substitution. The first three steps in Christian transdisciplinary translation will be conducted in this chapter, while the final two steps in the process—*transposition* and *composition*—will be undertaken in the analysis of research results in chapter 4.

### **Biblical-Theological and Philosophical Foundations**

In outlining their proposal for Christian transdisciplinary scholarship, Eric Johnson and Craig Bartholomew designate the disciplines of theology, biblical studies, and philosophy as the fundamental metadisciplines “because their subject matters bear on all other subject matters.”<sup>2</sup> For one to justly do service to any attempt at transdisciplinary translation of a secular scholarly text for the purpose of Christian scholarship, one must first undergo the preparatory task of gaining Christian literacy, including the adoption of a Christian purpose (conformity to Christ for the glory of God), submission to the Spirit and wider community of faith in the search for wisdom, and an intimate knowledge of Scripture and classic texts of the Christian tradition.<sup>3</sup> As a *preparatory* task, a full accounting of my knowledge of the fundamental metadisciplines is beyond the scope of this project.<sup>4</sup> However, an articulation of those biblical–theological and philosophical foundations most relevant to the research questions are provided below. Important biblical–theological and philosophical foundations include how the *imago Dei* relates to redemptive history, the composition of humanity, and union with Christ.

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<sup>2</sup>Eric L. Johnson, and Craig G. Bartholomew, “Transdisciplinarity: A Proposal for the Renewal of Christian Scholarship in the 21st Century” (The Paideia Centre for Public Theology), accessed May 22, 2014, <http://christianpsych.org/media/transdisciplinarity.pdf>, 4–5.

<sup>3</sup>Johnson, *Foundations for Soul Care*, 221–26.

<sup>4</sup>My preparation and establishment in the foundational metadisciplines of theology, biblical studies, and philosophy include the following educational and life experiences: a Bachelor of Arts in Philosophy and Religion; a Master of Divinity with Biblical Languages; a Master of Theology in Biblical Spirituality and Christian Ethics; and more than a decade as lead preaching pastor of a local church.



## The *Imago Dei* and Redemptive History

At the most foundational level, this study assumes that all creation exists for the purpose of glorifying God in Christ, with every element pointing toward this ultimate purpose.<sup>5</sup> The universe from its inception has been caught up in the grand metanarrative revealed by its Creator in the Christian Scriptures: creation, fall, redemption, and consummation. From start to finish, the Bible tells the story of “God’s glory in salvation through judgment.”<sup>6</sup> While all creation is caught up in the unfolding of this history of redemption, human beings play a unique role as bearers of God’s image and viceregents under him.<sup>7</sup> Humans are “the pinnacle of [God’s] creation,” according to Wayne Grudem.<sup>8</sup> In this section, the doctrine of theological anthropology—particularly as it relates to the *imago Dei*—will be traced through Scripture’s metanarrative.

**Creation.** The story of creation told in Genesis 1 places human beings in a unique position within the created realm as they alone share the *imago Dei*. Both men and women participate in this distinction equally (Gen 1:27). The creation of man and woman was embodied from the beginning. God first formed the man’s physical body from the material of the earth, and then he breathed life into that body; only at this point did the man become a “living creature” (Gen 2:7).<sup>9</sup> In the same way, God created the woman’s physical body from the material of the man’s and then brought her to the man. Men and

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<sup>5</sup>This is what Eric Johnson has referred to as “the doxological-semiotic purpose of the creation,” Johnson, *Foundations for Soul Care*, 269.

<sup>6</sup>James M. Hamilton, *God’s Glory in Salvation through Judgment: A Biblical Theology* (Wheaton, IL: Crossway, 2010).

<sup>7</sup>Peter J. Gentry and Stephen J. Wellum, *Kingdom through Covenant: A Biblical-Theological Understanding of the Covenants* (Wheaton, IL: Crossway, 2012), 16–42, 139.

<sup>8</sup>Wayne Grudem, *Systematic Theology: An Introduction to Biblical Doctrine* (Grand Rapids: Zondervan, 2000), 613.

<sup>9</sup>The Hebrew verb describing God’s creative action shifts between chaps. 1 and 2. In chap. 1, the Hebrew word *bārā* is used, whereas *yāsar* is used in chap. 2. This second word connotes design and intention, implying the image of a potter molding clay. Allen P. Ross, *Creation and Blessing: A Guide to the Study and Exposition of Genesis* (Grand Rapids: Baker Books, 1996), 122.

women were created from the beginning as embodied beings in God’s image. To possess the *imago Dei* is the essence of being human.<sup>10</sup> James Estep, Jr. names the biblical concept of the *imago Dei* as being “central to the Christian understanding of anthropology.”<sup>11</sup> As the embodied *imago Dei*, humanity has a simultaneously natural and supernatural (though not divine) existence.<sup>12</sup>

Debate has long existed about the exact nature of the *imago Dei* and its implications for the identity and nature of humanity, and these conversations continue today in biblical–theological scholarship. A full discussion of the many views is beyond the scope of this study. This study embraces the understanding of the *imago Dei* as that which sets apart humanity as being created for covenant relationship with God, with the capacity to know him and the role of representing him in creation.<sup>13</sup> By God’s design, embodiment is one aspect of bearing God’s image.<sup>14</sup> Barth understood humanity’s creation as the *imago Dei* as establishing the covenant relationship between God and humanity, with the unions of male and female of the body and the soul as repetitions of that highest covenant relationship between God and humankind.<sup>15</sup> In their original state, the first human pair lived in relationship with their Creator and one another and in a state

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<sup>10</sup>Charles Sherlock, *The Doctrine of Humanity*, Contours of Christian Theology (Downers Grove, IL: InterVarsity Press, 1996), 213.

<sup>11</sup>James R. Estep, “Christian Anthropology: Humanity as the Imago Dei,” in *Christian Formation: Integrating Theology and Human Development* (Nashville, TN, TN: B & H Academic, 2010), 11.

<sup>12</sup>John Cooper writes, “God made humans from and for the earth, but we are also part of the spiritual realm. We are dust and spirit, natural and supernatural (but not divine) beings, a little higher than the animals and a little lower than the angels.” John W Cooper, “The Current Body-Soul Debate: A Case for Dualistic Holism,” *The Southern Baptist Journal of Theology* 13, no. 2 (2009): 36.

<sup>13</sup>Peter J. Gentry and Stephen J. Wellum, *Kingdom through Covenant*. See also Anthony A. Hoekema, *Created in God’s Image* (Grand Rapids: William B. Eerdmans, 1986), 67.

<sup>14</sup>Gregg R Allison, “Toward a Theology of Human Embodiment,” *The Southern Baptist Journal of Theology* 13, no. 2 (2009): 5.

<sup>15</sup>Karl Barth, *The Doctrine of Creation*, ed. Geoffrey W. Bromiley and T. F. Torrance, 14th ed., *Church Dogmatics*, vol. III.2 (New York: T&T Clark, 2010).

of sinless perfection, though not yet in a state identical to the consummate state that would exist after redemption.<sup>16</sup> Augustine's distinction between *posse non peccare* (able not to sin) and *non posse peccare* (inability to sin) is helpful here; the former applies to humanity prior to the fall and the latter to humanity at the consummation.

**Fall.** When humanity sinned against God, the *imago Dei* was corrupted, though not lost.<sup>17</sup> Man's capacities and structures remained in place, yet his will was no longer aligned with God's. This change is universal, for the sin of the first man—with whom all other humans would be linked—brought about a corruption in human nature.<sup>18</sup> Rather than functioning in covenant relationship with God, humans instead are born in a state of rebellion and enmity with God (Eph 2:1–3). Rather than represent God to the world as they worship him, humans worship created things and debase themselves by becoming like them before God (Rom 1:18–32). Augustine referred to humanity's state after the fall as *non posse non peccare* (not able not to sin). This phrase depicts the extent of the fall's consequences, which “spread through the entire man, leaving no part of his nature untouched, but vitiating every power and faculty of body and soul.”<sup>19</sup> This total depravity does not mean that humans are as corrupt as they possibly can be, but merely that no part of their constitution has been exempt from sin's corruption.

The separation between God and his fallen image bearers is not merely the result of the sum of their sinful actions. In the Bible, sin is both an act against God and his will and a power or inclination against God and will which precedes actions. In other words, sin is not merely something a person *does*, but also a state in which a person

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<sup>16</sup> Anthony A. Hoekema, *Created in God's Image* (Grand Rapids: William B. Eerdmans, 1986), 82.

<sup>17</sup> Hoekema, *Created in God's Image*, 83.

<sup>18</sup> Grudem, *Systematic Theology*, 495.

<sup>19</sup> Louis Berkhof, *Systematic Theology* (Grand Rapids: William B. Eerdmans, 1996), 225–26.

*exists*.<sup>20</sup> Being born into a state of sin, humans commit acts of sin. Yet the influence is bidirectional: repeated acts of sin reinforce and even progress the state of sinfulness.<sup>21</sup> Among the most important implications of this corruption is humanity's inability to discover or comprehend without divine aid the saving knowledge of God. Though fallen humanity is still capable of knowing there is a God, the ability to have a personal, relational knowledge of him leading to eternal life is lacking.<sup>22</sup>

**Redemption.** The drama of redemptive history takes a mysterious and surprising turn in the work of God in Jesus Christ, whose death and resurrection proved to be the key that unlocks the thematic thread throughout the Scriptures that through God's judgment he brings about salvation for his people.<sup>23</sup> As Noah was saved through the flood of judgment, as the Hebrews were delivered through the Red Sea, so humanity is saved through the judgment of God being poured out on his Son. Even in the creation account, a foreshadowing of this theme is present: after the man and woman eat the forbidden fruit, it is not they who die, but an innocent animal who provides cover for their shame (Gen 3:21).

Rather than leave sinful humanity in its fallen state, bearing a marred *imago Dei*, God sovereignly chose to redeem humanity through the plan of salvation. This plan involved God the Father sending God the Son to be incarnated as a human, and as such to become the perfect image of God.<sup>24</sup> The New Testament affirms that Jesus Christ is "the image of God" (2 Cor 4:4; see also Col 1:15). When Philip asked Jesus to show him the

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<sup>20</sup>Berkhof, *Systematic Theology*, 233.

<sup>21</sup>Hoekema, *Created in God's Image*, 173.

<sup>22</sup>Timothy Paul Jones, "John Calvin and the Problem of Philosophical Apologetics," *Perspectives in Religious Studies* 23, no. 4 (1996): 396.

<sup>23</sup>Hamilton, *God's Glory in Salvation through Judgment*, 39.

<sup>24</sup>Hoekema, *Created in God's Image*, 20–21.

Father, Jesus responded, “Whoever has seen me has seen the Father” (John 14:9). Unlike fallen men and women, who bear God’s image yet misrepresent him to the world, Jesus Christ lived as “the radiance of the glory of God and the exact imprint of his nature” (Heb 1:3). Jesus, always living in submission to God and his will, fulfilled the mandate originally entrusted to all humanity as bearers of God’s image.

The incarnation allowed God to save fallen man from the wages of sin. The judgment for human sin could be satisfied only by human death, yet until Christ no human was fit to fill the role of “the Lamb of God, who takes away the sins of the world” (John 1:29). The death of Christ for sinners is the ground of their salvation: all that is deserved for our failure to rightly image God in the world was taken on by him who perfectly imaged God in the world. Because of the judgment that fell on Christ, we who deserve judgment are justified before God by grace through faith in him (2 Cor 5:21; Eph 2:8). Likewise, because of his resurrection, those who have faith in him are not merely forgiven but promised new, eternal life, as well (Rom 6:8).

Justification is only one phase of salvation and does not bring about the full restoration of the *imago Dei* in humanity. Hoekema writes, “It is better to say that the image of God that has become perverted, though not totally lost, is being rectified, is being set straight again.”<sup>25</sup> To return to Augustine’s progression of humanity’s relationship to sin through redemptive history, in redemption those who are saved through Christ *posse non peccare* (able not to sin). The power to live in relationship with God and to will as he wills is restored, though this is not perfectly expressed immediately upon redemption. The process of sanctification follows justification. Sanctification is a supernatural work of God by which the sinful nature is being put to death and a new

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<sup>25</sup>Hoekema, *Created in God’s Image*, 86.

nature is being quickened,<sup>26</sup> resulting in a gradual transformation toward conformity to the image of Christ, the perfect bearer of the image of God (Rom 8:28–29).

Christ is the Second Adam (1 Cor 15:45), a recreation of humanity by God, who opens the way for fallen humanity to be caught up in God’s activity of re–creation. The incarnation knit the divine nature of the eternal Son together with human flesh, and indeed with all the created universe, initiating the work of renewal that would continue until his return.<sup>27</sup> Now found “in Christ,” believers have a new identity, community, and history: they are adopted children of God the Father (Rom 8:15); members of the body of Christ (1 Cor 12:12); participants with Christ in his life, death, burial, resurrection, and ascension (Rom 6:8; Eph 2:6; Gal 2:20). In Christ, God began a new creative work, remedied the consequences of the fallen, first creation, and initiated his work of summing all things up in Christ at the end of the age.<sup>28</sup>

**Consummation.** Justification and sanctification will finally be concluded with the believer’s glorification, at which time “we shall be like him, because we shall see him as he is” (1 John 3:2). The risen Christ, who ascended into heaven, shall return to make all things new (Rev 21:5). Indeed, the final scene of redemptive history is not an ethereal spiritual realm of disembodied worshippers, but a redeemed and re–created earth with worshipper in glorified, resurrected bodies (Rev 21:1–4; 1 Cor 15:22). All of creation, which had been subjected to futility, will receive that for which it had been groaning (Rom 8:20–22). This will be the completion of God’s “purpose, which he set forth in Christ, as a plan for the fullness of time, to unite all things in him, things on heaven and

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<sup>26</sup>Berkhof, *Systematic Theology*, 533.

<sup>27</sup>Gerald O’Collins, *Incarnation*, New Century Theology Series (London: Continuum, 2002), 131.

<sup>28</sup>Verna E. Harrison, *God’s Many-Splendored Image: Theological Anthropology for Christian Formation* (Grand Rapids: Baker Academic, 2010), 41.

things on earth” (Eph 1:9–10), “that God may be all in all” (1 Cor 15:28). The salvation which had been inaugurated with the death and resurrection of Jesus will be finally consummated upon his return.<sup>29</sup>

Upon the return of Christ and the resurrection of the dead, those who are united to Christ by faith will be given physical–spiritual bodies after the likeness of the risen Christ (1 Cor 15:44).<sup>30</sup> In this state, sin and death will have been finally defeated, and the *imago Dei* will be perfectly represented in humanity, now “conformed to the image of Christ” (Rom 8:29). Humans will be *non posse peccare* (not able to sin), “in splendor, without spot or wrinkle of any such thing... holy and without blemish” (Eph 5:27). At the consummation, humanity will be in perfect relationship with God and neighbor, the whole earth filled with the reign of God through Christ and us reigning with him.<sup>31</sup> The ultimate hope of salvation, therefore, is a glorified embodied existence with God in the new heavens and new earth.<sup>32</sup>

### **The *Imago Dei* and the Composition of Human Beings**

Possible solutions to the problem of the relationship between the body and soul are myriad. Joel Green provides a partial list, including substance dualism, naturalistic dualism, wholistic dualism, emergent dualism, constitutional materialism, emergent monism, and nonreductive physicalism.<sup>33</sup> A detailed consideration of each of these schools of thought is beyond the scope of this study, but they can be effectively organized

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<sup>29</sup>George Eldon Ladd, *A Theology of the New Testament* (Grand Rapids: Eerdmans, 1974), 558.

<sup>30</sup>Thomas R. Schreiner, *New Testament Theology: Magnifying God in Christ* (Grand Rapids: Baker Academic, 2008), 855.

<sup>31</sup>Hoekema, *Created in God's Image*, 95.

<sup>32</sup>Allison, “Toward a Theology of Human Embodiment,” 13.

<sup>33</sup>Joel B. Green, *Body, Soul, and Human Life: The Nature of Humanity in the Bible*, Studies in Theological Interpretation (Grand Rapids: Baker Academic, 2008), 10–11.

under broader headings. In this section, the biblical–theological concept of the *imago Dei* presented above will be used to evaluate three of these broader headings of thought on the relationship between the body and soul: radical dualism, forms of monism, and wholistic dualism.

**Radical dualism.** Western society, including much of the Western church, has assumed a foundation in Platonic dualism.<sup>34</sup> This view holds to a strict distinction between the material and immaterial components that make up human beings. Plato believed humans existed prior to conception as immortal, spiritual souls, and that in earthly life these souls are trapped in human bodies. In Platonic dualism, the material is always inferior to the spiritual, and this cosmological dualism applies to humanity and its make up. The human body is a problem, an obstacle that must be overcome by the soul for its spiritual development.<sup>35</sup> This reasoning was later adopted by Christian ascetics to support their position and practices.

The radical dualism of Plato was adopted later by the Gnostics.<sup>36</sup> Gnosticism understood the material world to be evil and irredeemable, and the hope of humanity is liberation of their immaterial souls from their physical bodies through knowledge (*gnosis*). Docetism, an early Christian heresy rooted in Gnosticism, taught that Jesus Christ did not come to earth with a physical body and was therefore not fully human.<sup>37</sup> The Docetic theology argued that because God cannot suffer, a suffering Christ could

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<sup>34</sup>Alison J. Gray, “Whatever Happened to the Soul? Some Theological Implications of Neuroscience,” *Mental Health, Religion & Culture* 13, no. 6 (September 2010): 638.

<sup>35</sup>R. W. Sharples, *Stoics, Epicureans and Sceptics: An Introduction to Hellenistic Philosophy* (New York: Routledge, 1996), 86.

<sup>36</sup>G. L. Borchert, “Gnosticism,” in *Evangelical Dictionary of Theology*, ed. Walter A. Elwell (Grand Rapids: Baker Academic, 2001), 486.

<sup>37</sup>G. L. Borchert, “Docetism,” in *Evangelical Dictionary of Theology*, ed. Walter A. Elwell (Grand Rapids: Baker Academic, 2001), 349.



not be truly God. Instead, Christ was an alien messenger not from the fallen, evil creation and untouched by it. Such teaching is antithetical to the biblical gospel, which makes clear that “Jesus Christ has come in the flesh,” and to say otherwise is of the antichrist (1 John 4:2–3). The logical theological end of extreme body–mind dualism is a denial of the incarnation, and its practical end is either asceticism or licentiousness.<sup>38</sup>

Given the biblical–theological foundation for the *imago Dei* as understood through the history of redemption provided above, any view that denies that Jesus Christ is the perfect bearer of the image of God runs counter to the teaching of Scripture and must be rejected. Among the most compelling arguments for the necessity of Christ’s full humanity and divinity is Athanasius’ work, *On the Incarnation*.<sup>39</sup> For Athanasius, the idea that Jesus came merely as a spiritual being and solely for spiritual purposes flies in the face of the gospel: “The supreme object of His coming was to bring about the resurrection of the body.”<sup>40</sup> Athanasius demonstrates through Scripture and reason that only the Son of God incarnate, fully divine and fully human, could restore fallen man, for “it was He alone, the Image of the Father, Who could recreate man made after the Image.”<sup>41</sup> This recreation did not merely aim for the salvation of the spiritual–immaterial soul of humanity, but for the glorification of the whole being. The eternal Son took on the nature of humanity so that humanity might share in the nature of God.<sup>42</sup> It is in Christ, the God–man, that the human and divine natures meet, such that the divine can taste human death so that the human can come into divine life. Without a human body, according to

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<sup>38</sup>Alexandria Blake Ford, “The Implications of an Evangelical Theology of the Body for Christocentric Spiritual Formation” (EdD thesis, The Southern Baptist Theological Seminary, 2018), 49.

<sup>39</sup>Athanasius, *On the Incarnation: The Treatise De Incarnatione Verbi Dei* (Crestwood, NY: St. Vladimir’s Seminary Press, 1996).

<sup>40</sup>Athanasius, *On the Incarnation*, 52.

<sup>41</sup>Athanasius, *On the Incarnation*, 41.

<sup>42</sup>Athanasius, *On the Incarnation*, 93.

Athanasius, Christ could not have saved sinful man. Yet sinful man is saved by means of a physical body: that of God the Son made flesh.

Any radicalized version of anthropological dualism that degrades the body or elevates the soul depicts a very different valuation of the body and soul from what is seen in the story of redemption history, especially given the reality of the incarnation and future renewal of all creation. Assumptions that the immaterial soul is the “real” human person and that the body is a corrupted and unfortunately necessary container for the soul during earthly life falls short of accounting for the radical nature of Christ’s incarnation. The work of humanity’s salvation required becoming human, which necessitated that Christ “share in flesh and blood” (Heb 2:14). The picture presented in the New Testament is that Jesus Christ could not have been truly man apart from possessing and being united to a human body.

**Monism.** Monism denies the existence of a separate, non-material substance or “part” of humans, yet also denies that material nature alone can account for human nature and experience. Though forms of monism have existed throughout the history of the church, with the rise of Enlightenment philosophy in the seventeenth century a new case for monism based on scientific developments arose from philosophers such as Thomas Hobbes and Baruch Spinoza.<sup>43</sup> Two of the more prominent forms of monism held today among Christian philosophers include emergentism and non-reductive physicalism. Emergentism holds the view that the human soul (or “personhood” as it is described in many philosophical writings) is an emerging reality of the physical body and brain through the process of normal development.<sup>44</sup> One contemporary example of emergent monism is the philosophical anthropology of Roger Scruton: “I would suggest

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<sup>43</sup>Cooper, “The Current Body-Soul Debate,” 33.

<sup>44</sup>Hasker, “Do My Quarks Enjoy Beethoven?,” 14.

that we understand the person as an emergent entity, rooted in the human being but belonging to another order of explanation than that explored by biology.<sup>45</sup> Non-reductive physicalism claims that the human consciousness is the product of the material brain and body, but that natural science cannot account for the reciprocal relationship of influence between the mind and the brain.<sup>46</sup>

Though many biblical arguments for monism have been attempted, most fall short in dealing with Scripture's teaching about the supernatural existence of man, particularly during the intermediate state between physical death and bodily resurrection.<sup>47</sup> Joel Green is among the most prominent evangelical theologians who advocates for a form of monism.<sup>48</sup> Green has done much to combat radical dualism and demonstrate its inconsistency with Scripture, but his view also raises a number of problems. In his most detailed account of his theological anthropology, *Body, Soul, and Human Life: The Nature of Humanity in the Bible*, Green does not directly address such important theological topics as regeneration, nor does he deal with verses that address the intermediate state between physical death and the resurrection which are exceedingly problematic for his view.<sup>49</sup>

**Wholistic dualism.** Wholistic dualism suggests essentially distinct but functionally unified material and immaterial elements make up humans. Gregg Allison argues, "The body is the material component of human nature distinct from—but

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<sup>45</sup>Roger Scruton, *On Human Nature* (Princeton, NJ: Princeton University Press, 2017), 30.

<sup>46</sup>Kevin Corcoran and Kevin Sharpe, "Explaining Consciousness," in *Neuroscience and the Soul: The Human Person in Philosophy, Science, and Theology*, ed. Thomas M. Crisp, Steven L. Porter, and Gregg Ten Elshof (Grand Rapids: William B. Eerdmans Publishing Company, 2016), 181–89.

<sup>47</sup>Cooper, "The Current Body-Soul Debate," 39.

<sup>48</sup>Green, *Body, Soul, and Human Life*; Green, *What about the Soul?*

<sup>49</sup>For a detailed critique of Green's position, see R. Scott Smith, "Joel Green's Anthropological Monism: Biblical, Theological, and Philosophical Considerations," *Criswell Theological Review* 7, no. 2 (2010): 19–36.

intimately linked with—the immaterial component, commonly called the soul (or spirit).”<sup>50</sup> This position is also referred to as dualistic holism, which connotes that humans are “single beings consisting of different parts, aspects, dimensions, and abilities that are not naturally independent or separable,” and that “our core personalities... can exist apart from our physical bodies after death.”<sup>51</sup> This view of the relationship between body and soul affirms that “the normal state of human existence is an embodied existence,” with the period between physical death and resurrection at the return of Christ as an “abnormal condition.”<sup>52</sup> The philosophical formulation of wholistic dualism claims that “a human being is one substance, entity, or thing constituted of two distinct ingredients or components.”<sup>53</sup>

The concept of embodiment was first developed by the phenomenologist Maurice Merleau-Ponty, who used the term to refer to the necessary subjectivity resulting from the bodily aspect of human experience.<sup>54</sup> Embodiment requires humans to exist in a particular context in space and time, which implies that humans are embedded into a particular cultural and social context. This context provides experiences and patterns of meaning-making that, along with the body’s incoming sensory data and internal sensation and felt-emotions, compose an individual’s subjective reality.<sup>55</sup> Phenomenologically speaking, the subjective identity of a human being is bound up in the bodily existence lived out in relationship to other bodies in a particular place and at a

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<sup>50</sup>Allison, “Toward a Theology of Human Embodiment,” 5.

<sup>51</sup>Cooper, “The Current Body-Soul Debate,” 35.

<sup>52</sup>Allison, “Toward a Theology of Human Embodiment,” 5.

<sup>53</sup>Cooper, “The Current Body-Soul Debate,” 36.

<sup>54</sup>Ola Sigurdson, “How to Speak of the Body? Embodiment between Phenomenology and Theology,” *Studia Theologica* 62, no. 1 (2008): 35.

<sup>55</sup>M. Elizabeth Lewis Hall and Erik Thoennes, “At Home in Our Bodies: Implications of the Incarnation for Embodiment and Christian Higher Education,” *Christian Scholar’s Review* 36, no. 1 (2006): 30.

particular time, and these components of subjectivity—internal cognitions and felt-sense, relational connections, sociocultural context—are all intricately woven together through embodiment. Embodiment demands that human existence cannot be reduced to neatly separable material or immaterial, individual or social, and cognitive or affective components.

Eric Johnson articulates a dualistic theological anthropology that understands human beings to be embodied unities of four complexly interrelated orders of semiodiscursive meaning.<sup>56</sup> The foundation of Johnson’s model is the understanding that humans, like all creation, are created as a sign (semiotic) ultimately pointing to God and his glory, and that they exist by and in relationship (discourse) with God’s Word. The semiodiscursive nature of creation means all things, including humanity, find their origin, purpose, function, and end in manifesting God’s glory. The four orders Johnson names are the biophysiological, the psychosocial, the ethical, and the spiritual. Though Johnson uses the language of “higher” and “lower” when describing these words, these labels are not meant to imply importance or value but instead communicate complexity.<sup>57</sup> While all four orders are reflective of what it means to be made in the image of God and are lived in discourse with God and his Word,<sup>58</sup> the first three orders experience this only

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<sup>56</sup>Johnson, *Foundations for Soul Care*, 333.

<sup>57</sup>Johnson, *Foundations for Soul Care*, 369–74.

<sup>58</sup>Johnson writes:

All four orders manifest God’s *beauty*—they simply lie on a continuum regarding the degree of explicitness, clarity or intensity of that manifestation. With the lower strata, the glory is arguably lesser in degree, since their articulation of the glory is less explicit. Similarly, the less clear the manifestation of Godlikeness, the lesser the glory. Therefore, living like Christ, according to the spiritual order, manifests the greatest glory. But the discourse of the lower strata also conveys some Godlikeness. The ethical stratum consists of the expression and human realization of God’s moral character. To live virtuously, even if not Christianly, manifests more Godlikeness and hence more glory than to live viciously. To a lesser extent, the basic components of human nature of the physiological order are also features of the image of God, for example, reason, emotions, relationality, personality and the self. Consequently, human nature that is well formed according to psychosocial norms also resembles God, certainly more than animals and plants. And all human

implicitly. The fourth and highest order, the spiritual, is explicitly and uniquely related to God, yet able to make explicit the relationship with God of the lower orders.<sup>59</sup> Thus these four orders are associated both subveniently and superveniently: lower orders are subveniently dependent on the higher orders for meaning and purpose; the higher orders are similarly superveniently dependent on the lower orders in which they are phenomologically grounded and from which they emerge (see Figure 1).<sup>60</sup>

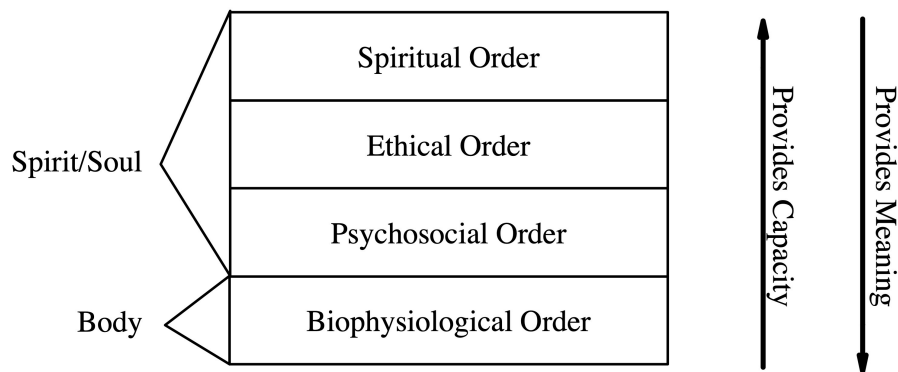


Figure 1. Johnson's four orders in relationship to one another

Johnson identifies the biophysiological as the first, lowest order. In this age, the biophysiological system of the brain and body “make possible human life as we know it.”<sup>61</sup> Johnson notes every human experience in the present age has a corresponding

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image-bearing is made possible by proper brain function—at least in this life. (Johnson, *Foundations for Soul Care*, 372)

<sup>59</sup>Johnson, *Foundations for Soul Care*, 351.

<sup>60</sup>Johnson, *Foundations for Soul Care*, 368–69.

<sup>61</sup>Johnson, *Foundations for Soul Care*, 335. By this Johnson does not mean that human life is dependent on the physical body in the same way a monist would. In addressing this issue, Johnson cites in his footnotes the well-known advocate for holistic dualism. See also John W Cooper, *Body, Soul and Life Everlasting: Biblical Anthropology and the Monism-Dualism Debate* (Leicester: Apollos, 2001).

measurable physiological reality, which means that in this present age the biophysiological order of humanity is the foundational platform for human life and all its higher level functioning.<sup>62</sup> This is not the same as saying the biophysiological is always the cause of the conscious state of the self; indeed, researchers have found bidirectional influence between the body–brain and mind, favoring the existence of psychophysical interactionism (see below).<sup>63</sup> Identifying the material body as phenomenologically required for life as we know it is not necessarily a move toward monism, for functional holism does not exclude a substance dualism in which the material and immaterial are complexly and intricately bound together.<sup>64</sup>

The human experience in this present age is mediated through the body. Experiences ranging from falling in love to prayer to practicing gratitude all have corresponding neurophysiological realities.<sup>65</sup> Research has also found clear links between biophysiological phenomena and beliefs, attitudes, desires, cognitions, and behaviors that would be considered as both “righteous” or “sinful” within the historic Christian faith. As an example, Burns and Swerdlow’s 2003 case study of a right orbitofrontal tumor causing pedophilia symptoms provides a compelling case that one cannot reduce “sin” to a merely spiritual reality.<sup>66</sup> The biophysiological order of humanity is foundational to our experience and understanding of humanity in this present age. While this does not mean no personal “spiritual” component of individuals exists apart from the body, it does mean

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<sup>62</sup>Johnson, *Foundations for Soul Care*, 336.

<sup>63</sup>Cooper, *Body, Soul and Life Everlasting*, 207.

<sup>64</sup>Cooper, *Body, Soul and Life Everlasting*, 212.

<sup>65</sup>Helen Fisher, Arthur Aron, and Lucy L. Brown, “Romantic Love: An fMRI Study of a Neural Mechanism for Mate Choice,” *Journal of Comparative Neurology* 493, no. 1 (2005): 58–62; Raymond L. Neubauer, “Prayer as an Interpersonal Relationship: A Neuroimaging Study,” *Religion, Brain & Behavior* 4, no. 2 (May 4, 2014): 92–103; Prathik Kini et al., “The Effects of Gratitude Expression on Neural Activity,” *NeuroImage* 128 (March 1, 2016): 1–10.

<sup>66</sup>Jeffrey M. Burns and Russell H. Swerdlow, “Right Orbitofrontal Tumor With Pedophilia Symptom and Constructional Apraxia Sign,” *Archives of Neurology* 60, no. 3 (March 1, 2003): 437–40.

we are limited phenomenologically to understanding human existence through our embodied nature. These findings also demonstrate the importance of the material body's health for optimal flourishing, not only physically, but also psychologically, ethically, and spiritually. In the follow sections on the three higher orders, linkage back to the biophysiological order as a fundamental platform for human experience will be provided.

The second order Johnson identifies is the psychosocial, which he describes as “the immaterial dynamic structures that originate in social interaction but are gradually internalized within the individual human being, developing throughout life and giving definition and dynamic form to the embodied human.”<sup>67</sup> Intrapersonal psychological structures are developed only through interaction with others. Relational and systemic dynamics require embodiment, and yet these dynamics also affect embodiment; therefore, the biophysiological and psychosocial orders are connected and bidirectionally influential. Humans exists in psychosomatic unity, with physical and non-physical dimensions that that are only truly understood in their oneness.<sup>68</sup> The body affects the soul, and the soul affects the body. The psychosocial order of humanity also importantly highlights the significance of relationships for human beings. As shown above, a fundamental aspect of the *imago Dei* is the relational nature shared by God with humanity. As bearers of the image of the Triune God, men and women are so fundamentally intended for relationship that humanity in isolation, even while sinless, was enough to provoke a divine proclamation of “not good” (Gen 2:18). Hoekema concludes, “Man cannot be truly human apart from others.”<sup>69</sup> The psychosocial order of human nature is the place of the conscious experience of identity, formed through the embodied experience of life in the world's relationships.

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<sup>67</sup>Johnson, *Foundations for Soul Care*, 336–37.

<sup>68</sup>Hoekema, *Created in God's Image*, 217–18.

<sup>69</sup>Hoekema, *Created in God's Image*, 77.



Johnson's third identified order is the ethical, which is the realm of personal agency, the conscience, volition, creativity, love of neighbor and communality, and the capacity for virtue, vice, and character.<sup>70</sup> As personal agents, human beings transcend the mere subject–object perspective that makes up the psychosocial order and gain the ability to relate as two equal, interdependent subjects who can express empathy, care, and even sacrifice for one another. This order of humanity is the realm of virtues, instilled by a community to be owned individually. Philosopher Alasdair MacIntyre communicates this order of human nature in the title of his work on virtues, *Dependent Rational Animals*, which argues that humans are fundamentally interdependent creatures in need of virtue.<sup>71</sup>

The ethical order of human nature—that is, the ability of a man or woman to have some sense of ownership for his or her own beliefs, attitudes, and actions, especially in relationship to others—is grounded in the individual's biopsychosocial capacities. For example, moral reasoning and the formation of a conscience is a developmental achievement, as recognized by both the Bible and neuroscience.<sup>72</sup> The ethical order emerges from both one's psychosocial and biophysiological existence. Consider the study cited earlier in which a grown man with no previous history of pedophilia began experiencing and acting pedophilic attraction due to the formation of a right orbitofrontal tumor.<sup>73</sup> When the tumor was removed, all pedophilia ceased and the patient felt a sense

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<sup>70</sup>Johnson, *Foundations for Soul Care*, 340–44.

<sup>71</sup>Alasdair C MacIntyre, *Dependent Rational Animals: Why Human Beings Need the Virtues* (Chicago: Open Court, 2014).

<sup>72</sup>The Bible distinguishes those who know right from wrong from those who do not (Jonah 4:11). Similarly, neurobiology is clear on the possession of moral reasoning as a capacity gained during development and linked to specific neural structures in the brain, especially the right orbitofrontal cortex. See Darcia Narváez, *Neurobiology and the Development of Human Morality: Evolution, Culture, and Wisdom*, The Norton Series on Interpersonal Neurobiology (New York: W. W. Norton & Company, 2014).

<sup>73</sup>Burns and Swerdlow, "Right Orbitofrontal Tumor."

of disgust for his previous desires and behaviors. Yet upon the tumor's return sometime later, these symptoms appeared again.

Evidence for the reality of the ethical order can be found in the moral framework, expressed through the world's religions, philosophies, and civil systems, within which humans live.<sup>74</sup> This order has been studied by developmental psychologists like Kohlberg, as well as within the newer field of positive psychology.<sup>75</sup> The ethical order begins with the development of a conscience, defined by Johnson as "a faculty or module responsible for the *perception* of the ethical order of meaning."<sup>76</sup> Accompanied by the conscious is a felt sense of agency, which allows individuals a sense of responsibility for how they relate to God, others, themselves, and creation in light of perceptions of their conscious. Character is developed as one's conscious is acted upon by the individual and influenced by one's community leading to markings of virtue or vice.

The highest order for humanity is the spiritual order. In one sense, spirituality is an aspect of all human beings because they are made in the divine image. Dallas Willard defines the *spiritual* aspect of personality as including "the heart or will...along with the emotions and intellect."<sup>77</sup> Thus all human beings are spiritual and are undergoing a process of formation, and their spiritual natures are developing in ways that will manifest in outward behaviors. An example of non-Christian development within the spiritual order is participation in a Twelve-Step program. Twelve-Step programs are self-

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<sup>74</sup>Johnson, *Foundations for Soul Care*, 340.

<sup>75</sup>Lawrence Kohlberg, *The Philosophy of Moral Development: Moral Stages and the Idea of Justice* (New York: Harper & Row, 1981); Shane J. Lopez and C. R. Snyder, eds., *The Oxford Handbook of Positive Psychology*, 2<sup>nd</sup> ed. (Oxford: Oxford University Press, 2011).

<sup>76</sup>Johnson, *Foundations for Soul Care*, 342.

<sup>77</sup>Dallas Willard, "Spiritual Formation in Christ: A Perspective on What It Is and How It Might Be Done," *Journal of Psychology & Theology* 28, no. 4 (2000): 255.

described as being “spiritual” in nature, but they are not necessarily Christian in their spirituality. While they appeal to a higher power in their methodologies, the nature and character of this higher power is left to each individual for his or her own determination. Twelve-Step “spirituality” falls short of the definition of Christian spirituality endorsed in the section below. Full participation in Twelve-Step programs, including sponsorship and service, support individuals in the development of personal virtues and ethics.<sup>78</sup> These reforms—while certainly resulting in behavior more closely in line with God’s intention for his image bearers—fall short of having a salvific origin or effect on the individual.

For the Christian, the spiritual order is chiefly meaningful because, according to Johnson, it is “something beyond the natural...realized exclusively through the work of the Holy Spirit.”<sup>79</sup> This order is that part of the human discourse that experiences God’s salvific work of regeneration and sanctification. It is also an eschatological reality, by which human beings in their present temporal state are simultaneously made part of the new creation of the future age. The spiritual order is the most important among the four, and it is the one that contains one’s metaphysics and worldview and thus provides ultimate meaning to all the others.<sup>80</sup> Sin, holiness, eternity, and grace are all discourses taking place within the spiritual order of human nature. In other words, the right and wrong of the merely ethical order are transposed in this higher order to discourse of the gospel: redemption from sin and reconciliation with God in Christ. In the spiritual order, all things are explicitly related to God and the Christian is found to be in Christ.

Humanity as the image of God on the earth entails the phenomenological unity of the four orders. These together present a wholistic dualism, in which the lowest

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<sup>78</sup>Byron L Crape et al., “The Effects of Sponsorship in 12-Step Treatment of Injection Drug Users,” *Drug and Alcohol Dependence* 65, no. 3 (February 1, 2002): 291–301.

<sup>79</sup>Johnson, *Foundations for Soul Care*, 345.

<sup>80</sup>Johnson, *Foundations for Soul Care*, 346.

biophysiological order is material and the higher psychosocial, ethical, and spiritual orders are immaterial. As a unity, however, each affects the others. The salvific work of God the Spirit in regeneration and sanctification is a discourse of the spiritual order which reorients and provides new meaning and purpose for the lower orders. Through this spiritual order the eschatological reality of the coming age is brought to bear upon the whole person: a conversion of ethics to godly virtues; new patterns of thinking, feeling, and believing psychosocially; and the reckoning of the body as dead to sin and alive to righteousness. The spiritual aspect of humanity cannot be transformed without affecting all other parts of life.<sup>81</sup> At the consummation, the *imago Dei* will be finally, fully realized with glorified biophysiology, psychosocial schema, ethical practice, and spiritual worship.

### **Christian Spiritual Formation of Students**

Definition of *spiritual formation* in Protestant higher education institutions are myriad.<sup>82</sup> Some suggest that little utility is gained with the use of the term *spiritual formation*, understanding it as a broad term encompassing a wide range of any activities that endeavor to promote spiritual growth.<sup>83</sup> Even among those who are encouraged by the renewed interest in spiritual formation by Protestants, little is done to distinguish spiritual formation from more general concepts within the Christian theological framework. For example, Steve Porter, seeking to reassure suspicious evangelicals, writes that spiritual formation is little more than “the Protestant doctrine of sanctification

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<sup>81</sup>Evan B. Howard, *A Guide to Christian Spiritual Formation: How Scripture, Spirit, Community, and Mission Shape Our Souls* (Grand Rapids: Baker Academic, 2018), 12.

<sup>82</sup>“Seminaries and the Ecology of Faith: An Interview with Daniel Aleshire,” *Christian Century* 116, no. 4 (1999): 110–23.

<sup>83</sup>Willard, “Spiritual Formation in Christ,” 254. Willard does not endorse this view, but is referring to others against whom he argues in this article.

in a new key.”<sup>84</sup> Others define spiritual formation as a practice or set of practices—the spiritual disciplines—that have a formative effect on the soul.<sup>85</sup> The Association of Theological Schools includes spiritual formation as a requirement for accreditation in Standard A.2.4, but does little to define what is meant by spiritual formation:

The program shall provide opportunities through which the student may grow in personal faith, emotional maturity, moral integrity, and public witness. Ministerial preparation includes concern with the development of capacities—intellectual and affective, individual and corporate, ecclesial and public—that are requisite to a life of pastoral leadership.<sup>86</sup>

The lack of specificity regarding this requirement has resulted in ATS schools implementing the standard in ways that make cross-institutional analysis difficult.<sup>87</sup>

Spiritual formation is best understood as a *process*. Dallas Willard articulates spiritual formation as a “developmental process” by which “the spiritual side of the human being, Christian and non-Christian alike, develops into the reality which it becomes, for good or ill;” indeed, “everyone receives spiritual formation.”<sup>88</sup> Willard defines the *spiritual* aspect of personality as including “the heart or will...along with the emotions and intellect.”<sup>89</sup> Further, spiritual formation is carried out “by the spirit or by the spiritual realm. . . . We speak of spiritual formation here because the means (or agency) that does the shaping of the human personality and life are spiritual.”<sup>90</sup> Thus all

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<sup>84</sup>Steve L. Porter, “Sanctification in a New Key: Relieving Evangelical Anxieties over Spiritual Formation,” *Journal of Spiritual Formation and Soul Care* 1, no. 2 (November 1, 2008): 129–48.

<sup>85</sup>Barbara Anne Keely, “Spiritual Formation for Ordained Ministry: An Ecumenical Approach,” *Teaching Theology and Religion* 6, no. 4 (2003): 202–7.

<sup>86</sup>“Standards of Accreditation” (The Association of Theological Schools Commission on Accreditation, 2010), <https://www.ats.edu/uploads/accrediting/documents/standards-of-accreditation.pdf>.

<sup>87</sup>Patricia A. Rhodes, “A Tale of Two Schools: The Spiritual Development of Leaders in Protestant Seminaries” (Ph.D., University of San Diego, 2014), 34–43.

<sup>88</sup>Willard, “Spiritual Formation in Christ,” 254.

<sup>89</sup>Willard, “Spiritual Formation in Christ,” 255.

<sup>90</sup>Willard, “Spiritual Formation in Christ,” 255.

human beings are undergoing a process of formation, and their spiritual natures are developing in ways that will manifest in outward behaviors.

Elsewhere, Willard describes explicitly *Christian* spiritual formation as “the Spirit–driven process of forming the inner world of the human self in such a way that it becomes like the inner being of Christ himself.”<sup>91</sup> Christian spiritual formation is the transformation into Christlikeness of believers by the power of the Holy Spirit beginning at the time of regeneration and continuing throughout the lifespan. This process cultivates a biblical spirituality within the individual. Kenneth Boa provides a definition for biblical spirituality as “a Christ–centered orientation to every component of life through the mediating power of the indwelling Holy Spirit.”<sup>92</sup> The aim of Christian spiritual formation is the development of a maturing relationship with God in Christ through the Spirit which results in conformity to Christ’s character and to his gospel and purpose.<sup>93</sup>

Willard explains the mechanics of Christian spiritual formation as follows: The “spirit” or “heart” of a regenerate believer works in active coordination with its new life from above to participate in means by which “the feelings, ideas, mental processes and images, and the deep readiness of the soul and body” is positioned “to direct the body into contexts of experience in which the whole self is inwardly restructured to follow the eager spirit into ever fuller obedience.”<sup>94</sup> These means include Christian practices, which can include a number of activities. In addition to classic spiritual disciplines, such as solitude, prayer, fasting, worship, study, fellowship, and confession, Christian practices

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<sup>91</sup>Dallas Willard, *The Divine Conspiracy: Rediscovering Our Hidden Life In God* (San Francisco: Harper, 1998), 22.

<sup>92</sup>Kenneth D. Boa, *Conformed to His Image: Biblical and Practical Approaches to Spiritual Formation* (Grand Rapids: Zondervan, 2009), 19.

<sup>93</sup>Howard, *A Guide to Christian Spiritual Formation*, 16.

<sup>94</sup>Willard, “Spiritual Formation in Christ,” 256.

can include activities such as showing hospitality, keeping the Sabbath, practicing discernment, showing forgiveness, and even dying well.<sup>95</sup>

This process of Christian spiritual formation must not be understood as a non–personal chain reaction, such that the individual’s mere effort to undertake Christian practices sets in motion a series of cause-and-effect events resulting in Christlikeness. What makes spiritual formation truly *Christian* is that the effectual power is by the Spirit of God in Christ.<sup>96</sup> All humans undergo some process of formation related to their immaterial or spiritual aspects of being, but Christian spiritual formation is a particular work of the Spirit of God in Christ upon the human spirit resulting in greater conformity to the image of Christ, the consummate bearer of the image of God.

While the Spirit is the primary acting agent in the process of Christian spiritual formation, active human participation by faith is required.<sup>97</sup> Christian spiritual formation is distinguished from discipleship in that while the latter takes into account the Christian’s entire life, identity, relationships, affections, the former more specifically applies to the pursuit of Christlikeness through the ways and means of the Christian life.<sup>98</sup> For the purposes of this study, Christian spiritual formation will be defined as the phenomenological dimension of Christian discipleship, whereby believers, through participation in a Spirit–driven process, are becoming more like Christ as they mature in

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<sup>95</sup> Dorothy C. Bass, ed., *Practicing Our Faith*. (Minneapolis: Fortress Press, 2019).

<sup>96</sup> Willard, “Spiritual Formation in Christ,” 256. Willard explains the distinction between a works–based earning of spiritual growth and an active, participation in spiritual growth: “We must stop using the fact that we cannot *earn* grace (whether for justification or for sanctification) as an excuse for not energetically seeking to receive grace. . . . Grace is opposed to earning, but not to effort” (257).

<sup>97</sup> Howard, *A Guide to Christian Spiritual Formation*, 17.

<sup>98</sup> John David Trentham, “Distinguishing Discipleship and Spiritual Formation” (unpublished paper, 2019).

their relationship with God through the intentional nurturing of the Christian ways and means of life.<sup>99</sup>

### **Christian Spiritual Formation and Wholistic Dualism**

The understanding of Christian spiritual formation articulated above is congruent with the theological–anthropological position of wholistic dualism.

Spirituality, according to Willard, is not to be understood in the radical dualist sense of being in absolute opposition to the physical:

Spirituality in human beings is not an extra or ‘superior’ mode of existence. It’s not a hidden stream of separate reality, a separate life running parallel to our bodily existence. It does not consist of special ‘inward’ acts even though it has an inner aspect. It is, rather, a relationship of our embodied selves to God that has the natural and irrepressible effect of making us alive to the Kingdom of God—here and now in the material world.<sup>100</sup>

The aim in Christian spiritual formation must not be thought of as limited to an internal state in which a believer cognitively thinks or even affectively feels rightly, but should include an ever–increasing congruence between this internal cognitive–affective state and external behavior. Thus the objective for Christian spiritual formation must be seen as “holistic, biblical restoration,” in which “we share the Trinity’s highest aspiration for people to be totally whole and for Christ–followers to be Christlike.”<sup>101</sup>

Christ, who is the pattern for the life of one made in God’s image, has been embodied in the incarnation, and as embodied beings it is only in and through our bodies that we can live like him; obedience to Christ that does not involve our embodied and

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<sup>99</sup>Trentham, “Distinguishing Discipleship and Spiritual Formation.”

<sup>100</sup>Dallas Willard, *The Spirit of the Disciplines: Understanding How God Changes Lives* (repr., San Francisco: HarperOne, 1999), 31.

<sup>101</sup>Ronald T. Habermas, *Introduction to Christian Education and Formation: A Lifelong Plan for Christ–Centered Restoration* (Grand Rapids: Zondervan, 2008), 60.



relational existence is “a practical impossibility.”<sup>102</sup> Maddix argues that spiritual development cannot be separated from an attentiveness to our own and others’ embodiment, since an integral part of being human and bearing God’s image is being in relationship with ourselves, others, and God.<sup>103</sup> Embodiment eliminates the possibility of spiritual formation that is not experienced by one’s internal felt-sense, in relationship to others, and in a sociocultural context.

Johnson’s four semiodiscursive orders provide a helpful conceptual framework for conceptualizing embodied Christian spiritual formation. As stated above, Christian spiritual formation will result in effects on the whole being, body and soul. The biophysiological, psychosocial, ethical, and spiritual orders of human existence must all be involved in Christian spiritual formation because (1) all have been created by God to point to his glory and (2) all have been assumed by the incarnate Christ to whom believers have been united by grace through faith. According to Johnson, when united to God in Christ by faith, “the believer enters into the highest semiodiscursive order—the new creation—and in so doing transposes the rest of reality, including the biophysiological, psychosocial, and ethical orders—one’s entire self—into a new system of meaning–relations.”<sup>104</sup> Flowing from the highest, spiritual order is a subvenient, teleological, and eschatological reorientation of the orders below. In the ethical order, the virtues are further developed to take on a proper meaning as true Godliness rather than mere humanitarianism.<sup>105</sup> In the psychosocial order, temporal historical–cultural position

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<sup>102</sup>Willard, *The Spirit of the Disciplines*, 30.

<sup>103</sup>Mark Maddix, “Spiritual Formation and Christian Formation,” in *Christian Formation: Integrating Theology & Human Development*, ed. James Riley Estep and Jonathan H. Kim (Nashville, TN, TN: B & H Academic, 2010), 244.

<sup>104</sup>Johnson, *Foundations for Soul Care*, 400.

<sup>105</sup>For an excellent work on the aretegenic (virtue–producing) effect of theological truth, see Ellen T. Charry, *By the Renewing of Your Minds: The Pastoral Function of Christian Doctrine* (New York: Oxford University Press, 1999).

and genetics are no longer the primary relational context in which one's identity and sense of self is embedded. Instead one's identity is based upon relatedness to God the Father in Christ the Son by the Holy Spirit, with the church, the body of Christ, as an embodied community who shares the story of Jesus as their own. Even the biophysiological order is, in a sense, sanctified as the believer now can offer the body to God and glorify God in the body (Rom 12:1; 1 Cor 6:20).

This transformation of the lower orders by the higher is neither automatic or instantaneous. After all, spiritual formation is a *process*. Willard describes how the disciplines act as a means for spiritual transformation:

These disciplines are not, in themselves, meritorious or even required except as specifically needed. They do, however, allow the spirit or will—an infinitesimally tiny power in itself that we cannot count on to carry our intentions into settled, effectual righteousness—to direct the *body* into *contexts of experience* in which the whole self is inwardly *restructured* to follow the eager spirit into ever fuller obedience.<sup>106</sup>

Consider the importance on humanity's embodied existence in this quote from Willard. Christian spiritual formation is a process of restructuring the whole self that takes place in contexts of experience by the body. Experiences lived out in the body are transformative at every level, affecting our intimate knowledge of God, our relationships with others, our self-concept, and even the physical structures of the brain's neural pathways. Union with God in Christ begins a process of formation by which the whole person undergoes changes in the direction of conformity to Christ ethically (in behavior toward the world and others), psychologically (in one's cognitions and affections), and even physically (presently neurobiologically, since particular behaviors, cognitions, and affections all result in corresponding particular neural structures and patterns in the brain; and eventually fully, at the resurrection).

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<sup>106</sup>Willard, "Spiritual Formation in Christ," 256. Emphasis mine.

Yet despite the greater meaning subveniently bestowed upon the lower orders by the highest, the lower orders, at least in this present age, continue to superveniently make the higher orders possible.<sup>107</sup> The spiritual order of humanity, in which humans can relate to and orient themselves to God in Christ, is made functionally possible by the ethical order, in which humans have the capacity to act with virtuous intention toward others. The ethical order emerges from the psychosocial, by which individuals can have a sense of self and other. The psychosocial is dependent upon the biophysiological, the brain and body providing the mechanisms by which sensory input is collected and run through neural circuitry that gives it meaning, relates it to existing memory networks, and enables affective, cognitive, and behavioral responses. Our embodiment, even at the lowest, strictly biophysiological levels, is what makes spirituality possible in the created world. Willard explains, “People have a body for one reason—that we might have at our disposal the resources that would allow us to be persons in fellowship and cooperation with a personal God.”<sup>108</sup>

No spiritual formation can take place outside of embodied existence. Christian spiritual formation begins when an individual is spiritually united to Christ by grace through faith (Eph 1:3; 2:8). This mystical union involves the believer being “found in him” (Phil 3:9); dead, yet with his life “hidden with Christ in God” (Col 3:3); seated with Christ in the heavenly realms (Eph 2:6). But this eschatological creative work of the spiritual order is lived out in ethical behaviors enacted through cells that make up bones, organs, muscles, flesh, and blood. These actions are rooted in psychosocial representations of the mind based in neurobiological structures. Christian spiritual formation transforms believers in the direction of loving God with all of one’s heart, soul, mind, and strength, and loving one’s neighbor as oneself. (Luke 10:27).

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<sup>107</sup>Johnson, *Foundations for Soul Care*, 368.

<sup>108</sup>Willard, *The Spirit of the Disciplines*, 92.

## Spiritual Formation in Higher Education

The current interest in spiritual formation within Protestant circles remains relatively new, with the Association of Theological Schools having only spiritual formation a requirement for accreditation in 1992.<sup>109</sup> The explanation of what the ATS expects from member institutions in regard to spiritual formation (Standard A.2.4) is concise and general:

The program shall provide opportunities through which the student may grow in personal faith, emotional maturity, moral integrity, and public witness. Ministerial preparation includes concern with the development of capacities—intellectual and affective, individual and corporate, ecclesial and public—that are requisite to a life of pastoral leadership.<sup>110</sup>

The lack of detail in what is meant by spiritual formation beyond growth “in personal faith, emotional maturity, moral integrity, and public witness”—even if necessarily left vague in order to allow different traditions to meet the requirements in ways compatible with their individual heritages—also comes with a lack of clarity regarding how this standards is to be implemented.<sup>111</sup>

One critique of attempts at spiritual formation by educational institutions is the influence and emphasis on individualism often assumed within Western educational philosophy.<sup>112</sup> Formation is necessarily a task that must be carried out in community, and Christian spiritual formation requires Christian community. Thus Dettoni argues that Christian educational institutions should not attempt to replace the local church as a context for formation, but should work to supplement students’ formation with knowledge that attends to spiritual growth.<sup>113</sup> Still others are outright opposed to

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<sup>109</sup>Rhodes, “A Tale of Two Schools,” 35.

<sup>110</sup>“Standards of Accreditation.”

<sup>111</sup>H. Frederick Reisz, “Assessing Spiritual Formation in Christian Seminary Communities,” *Theological Education* 39, no. 2 (2003): 29–40.

<sup>112</sup>Paul Bramer, “Christian Formation: Tweaking the Paradigm,” *Christian Education Journal* 4, no. 2 (2007): 354.

<sup>113</sup>J. M. Dettoni, “What Is Spiritual Formation?” in *The Christian Educator’s Handbook on*

academic institutions formally attempting spiritual formation, arguing that “it has often proved difficult for academic institutions to maintain proper emphasis on ministry training and spiritual formation while also achieving academic excellence.”<sup>114</sup>

In the end, however, one cannot separate information from formation.<sup>115</sup> Moore articulates an apologetic for the formative work of education:

Courses focused on textual analysis, history, theology, and ethics are assumed to be information-based. Courses focused on religious practices, histories of a particular denomination or tradition, or internships are assumed to be formation-based. Such assumptions deny the inevitable formative influence of the former and the intellectual content and questions of the latter. I suggest that any simple bifurcation is flawed, a point that has been made by numerous feminist scholars. I would add that all courses in theological and religious studies are informative, formative, and more. I suggest that they are also reformative and transformative. The critical question is not *whether* each area of study performs these roles, but *how*.<sup>116</sup>

Many have held to a view of spiritual formation that implicitly or explicitly holds to a bifurcation between the cognitive and affective realms, understanding the cognitive to be the work of formal education and the affective to be the work of communities of worship.<sup>117</sup> However, this view finds itself in conflict with a growing body of research from multiple disciplines. For decades now, neuroscientists have shown that no clear, clean separation between the cognitive and affective exists within the brain’s structure or function.<sup>118</sup> Jay Schulkin writes,

The first part of the cognitive revolution mistakenly omitted or denigrated the importance of the visceral/autonomic system in cognitive systems. The cognitivists tended to commit *Descartes’ Error* (Damasio, 1994); they downplayed the

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*Spiritual Formation*, ed. K. O. Gangel and J. Wilhoit (Wheaton, IL: Victor Books, 1994), 10.

<sup>114</sup>Stephen Kemp, “Situated Learning: Optimizing Experiential Learning through God-Given Learning Community,” *Christian Education Journal* 7, no. 1 (2010): 133.

<sup>115</sup>Fred Glennon et al., “Formation in the Classroom,” *Teaching Theology and Religion* 14, no. 4 (2011): 357–81.

<sup>116</sup>Glennon et al., “Formation in the Classroom,” 377.

<sup>117</sup>Bramer, “Christian Formation.”

<sup>118</sup>W. Gerrod Parrott and Jay Schulkin, “Neuropsychology and the Cognitive Nature of the Emotions,” *Cognition and Emotion* 7, no. 1 (January 1, 1993): 43–59.

importance of bodily or visceral information. Disembodied minds do not act, and certainly not well and over time.<sup>119</sup>

Learning more about any subject gives a student the increased capacity to respond to it; as one's knowledge is enhanced so are one's formative experiences.<sup>120</sup>

Hall and Thoennes argue that the embodied nature of humanity has profound implications for Christian higher education.<sup>121</sup> These implications include an awareness of embodiment reflected in educational aims to reach both the cognitive and emotional orders of student experience and acknowledgment of the subjectivity necessarily involved in embodiment. Responding to the question of whether or not Christian higher education institutions, and particularly seminaries, should aim at the spiritual formation of students, Jane Smith answers, "I believe, it cannot do other. It is, in fact, the very nature of what we do. . . . I would argue that to study theology in the context of the history of human religiousness is automatically to study, learn about, and thus in some sense to appropriate an understanding of virtue."<sup>122</sup> Smith articulates a distinction between character formation and spiritual formation, but insists they also cannot be dissociated: "Education is and must be a quest for wholeness."<sup>123</sup> Smith's argument aligns well with Johnson's framework for understanding the four orders of human experience. Increased knowledge of self and other will be formative within the psychosocial order, which will have an effect on one's character formation within the ethical order. This may not entail truly spiritual formation for those who are not indwelt by the Holy Spirit, but for those who are

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<sup>119</sup>Jay Schulkin, *Bodily Sensibility: Intelligent Action* (Oxford: Oxford University Press, 2004), 123.

<sup>120</sup>David H. Kelsey, *To Understand God Truly: What's Theological about a Theological School?* (Louisville, KY: Westminster John Knox Press, 1992).

<sup>121</sup>Hall and Thoennes, "At Home in Our Bodies." On the relationship between pedagogy and philosophical anthropology, see also Smith, *Desiring the Kingdom*, 40.

<sup>122</sup>Jane I. Smith, "Spiritual Awareness and the Formation of Character," *Theological Education* 24, no. 1 (1988): 94.

<sup>123</sup>Smith, "Spiritual Awareness and the Formation of Character," 94.

united to Christ, the idea of spiritual formation that is not also character formation is nonsensical.

James K. A. Smith strongly agrees that all Christian education is both doxological in relation to God and formative in relation to persons: “Christian education is Christian worship with the goal of the formation of radical disciples who desire the kingdom of God.”<sup>124</sup> In his doctoral thesis, Alexander Sosler argues for an understanding of Christian education as a particular fulfillment of the Great Commandment—to love God with all of one’s being and to love one’s neighbor as one’s self—both as a means and end.<sup>125</sup> In other words, Christian education is meant to produce Christian character, which is ultimately fulfilled in love. The mere transfer of information is not sufficient for growth in Christlikeness, thus cognitive learning is necessary but not sufficient for Christian spiritual formation.<sup>126</sup> The learning that takes place in Christian higher education institutions, if it is to result in spiritual formation, must surpass the cognitive domain.

Jack Mezirow’s theory of transformational learning holds that learning is more than a merely cognitive endeavor, but that it is also epistemic, resulting in the learner being changed by becoming critically aware of his or her own beliefs, biases, and assumptions.<sup>127</sup> Mezirow’s basic assertion is that, “reflection on one’s own premises can lead to transformative learning.”<sup>128</sup> Transformation can be *epocal*, meaning that it is

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<sup>124</sup>James K. A. Smith, *Desiring the Kingdom: Worship, Worldview, and Cultural Formation*, (Grand Rapids: Baker Academic, 2009), 19.

<sup>125</sup>Alexander Gabriel Sosler, “What Is Christian Higher Education For? An Assessment of Teleological Priorities at Selected Liberal Arts Institutions” (Ed.D., The Southern Baptist Theological Seminary, 2018).

<sup>126</sup>James K. A. Smith, *You Are What You Love: The Spiritual Power of Habit* (Grand Rapids: Brazos Press, 2016), 4.

<sup>127</sup>Jack Mezirow, ed., *Learning as Transformation: Critical Perspectives on a Theory in Progress* (San Francisco: Jossey-Bass, 2000), 4–7.

<sup>128</sup>Jack Mezirow, *Fostering Critical Reflection in Adulthood: A Guide to Transformative and*

sudden and dramatic, or *incremental*, meaning that it takes place over time through smaller changes.<sup>129</sup> Transformational learning theory acknowledges the relationship between the psychosocial and ethical orders of human existence and the formative relationship of each to the other:

Transformative learning has both individual and social dimensions and implications. It demands that we be aware of how we come to our knowledge and as aware as we can be about the values that lead us to our perspectives. Cultural canon, socioeconomic structures, ideologies and beliefs about ourselves, and the practices they support often conspire to foster conformity and impede development of a sense of responsible agency.<sup>130</sup>

Transformative learning produces changes in the learner that are cognitive, affective, and conative, resulting in embodied change for the learner.<sup>131</sup>

The link between transformative learning theory and Christian discipleship and spiritual formation has been established in the research literature.<sup>132</sup> Christian higher education institutions desiring to cultivate student spiritual formation throughout course curricula—as opposed to working toward this end solely in separate extracurricular experiences designated for the purpose of formation—will make use of transformative learning theory regularly in classroom teaching efforts.<sup>133</sup> The intentional introduction of new spiritual truths followed by community-based critical reflection on presuppositions can trigger Mezirow’s “disorienting dilemma,” leading to the opportunity for

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*Emancipatory Learning* (San Francisco: Jossey-Bass, 1990), 18.

<sup>129</sup>Mezirow, *Learning as Transformation*, 21.

<sup>130</sup>Mezirow, *Learning as Transformation*, 8.

<sup>131</sup>Jack Mezirow, “Transformative Learning: Theory to Practice,” *New Directions for Adult and Continuing Education* 1997, no. 74 (1997): 5–12.

<sup>132</sup>See, for example, Les Ball, *Transforming Theology: Student Experience and Transformative Learning in Undergraduate Theological Education* (Eugene, OR: Wipf & Stock, 2013); Julie Gorman, “‘There’s Got to Be More!’ Transformational Learning,” *Christian Education Journal* 5, no. 1 (2001): 23–51; Allen M. Bañez, “A Literature Review of Spirituality in the Transformative Learning Process of Students in Higher Education, with Implications for Online Learning” (Ed.D. diss., Biola University, 2016).

<sup>133</sup>Ball, *Transforming Theology*, 122–23.



transformation at more fundamental levels.<sup>134</sup> Not all formation resulting from transformative learning is spiritual in the sense defined in the section above, but when the content of the transformative learning is the living and active Word of God taught by the Holy Spirit, certainly Christian spiritual formation has occurred.

### **Affective Social Neurobiology**

Affective social neurobiology, also called interpersonal neurobiology or neuroaffective science, refers to that branch of neuroscience dealing with how the central and autonomic nervous systems govern the experience of relational attachments and interactions. While some researchers will separate social neuroscience from affective neuroscience, many others, such as Daniel Siegel, have demonstrated the intricate interrelatedness of these two areas of brain science.<sup>135</sup> Siegel argues that affective social neurobiology cannot rightly be understood without an interdisciplinary approach, drawing from fields such as developmental psychology, attachment studies, systems theory, communication, and others.<sup>136</sup>

The following review of literature on affective social neurobiology will be presented via Johnson's methodology for Christian transdisciplinary translation of non-Christian texts for Christian scholarship. Presented in the body of this section will be the product of the third step in this process: *translation proper* of the texts.<sup>137</sup> This third step involves four types of conceptual movement between the original text and its translation: *transliteration*, *same-saying* or *paraphrasing*, *interpretive glosses* and *explanations*, and *critique* or *substitutions*. Where concepts or terms are grounded in

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<sup>134</sup>Mezirow, *Fostering Critical Reflection in Adulthood*, 14.

<sup>135</sup>Daniel J. Siegel, *The Developing Mind: How Relationships and the Brain Interact to Shape Who We Are* (The Guilford Press, 2015).

<sup>136</sup>Siegel, *The Developing Mind*, 4.

<sup>137</sup>Johnson, *Foundations for Soul Care*, 233.

reality and have no direct correspondence within the “primary tongue” of Christian scholarship, they will be transliterated. If concepts or terms within the literature have corresponding concepts or terms within Christian scholarship, same-saying or paraphrasing will be employed. When significant differences are present, typically rooted in differences in worldview, interpretive glosses or explanations can serve to present the reality identified in the non-Christian literature in a way compatible with a Christian worldview. Finally, where the discrepancy between concepts of the two worldviews are irreconcilable, a critique or substitution will be used. Within the footnotes, significant moves within the first two steps, *comprehension* and *evaluation*, will be provided.<sup>138</sup>

### **Foundations for Affective Social Neurobiology**

Affective social neuroscience research cannot exist in a vacuum, but depends upon the research of other academic fields as components of its foundation. These include attachment theory, anatomical fundamentals of the brain and nervous system, and developmental neuroscience. While a full literature review of each of these foundational domains is beyond the scope of this chapter, they will be introduced for the purpose of providing conceptual context and fundamentals for the remainder of the literature review.

**Attachment theory.** In the 1940’s and 1950’s, the most prominent psychodynamic theories understood pathology in a Freudian framework, which conceptualized mental health issues as primarily being rooted in fantasy and intrapsychic conflicts between opposing impulses.<sup>139</sup> John Bowlby, a British developmental

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<sup>138</sup>Johnson, *Foundations for Soul Care*, 231–32.

<sup>139</sup>The Freudian worldview stands in contrast to a biblical worldview in many ways. Freud, an atheist, was fully Darwinian in his anthropology. Bowlby’s move away from Freudian presuppositions, while retaining Darwinian roots, also provided an increased sense of dignity for human personhood, especially as creatures designed for relational connections. While not reaching the fullness of truth about humanity as revealed in Scripture, Bowlby did advance his field by degree in the direction of truth.

psychologist who broke from his Freudian training, conceived of psychopathology in terms of intrapersonal conflict and began to consider the effects of interpersonal relationships on psychopathology.<sup>140</sup> Bowlby drew from his own observations of young children and work done in the field of ethnology to conceptualize an alternative theory that argues attachment is a primary drive rooted in biology, not fantasy:

Psychological attachment and detachment are to be regarded as functions in their own right apart altogether from the extent to which the child happens at any one moment to be dependent on the object for his physiological needs being met.<sup>141</sup>

Thus Bowlby asserts that attachment is rooted in the biology of the human being and is not formed as a result of another function, such as the provision of food from a caretaker to an infant.<sup>142</sup>

Bowlby emphasized as of first importance the first primary relationship, namely, that established between a child and his or her caregiver.<sup>143</sup> Drawing on existing research on attachment among animals,<sup>144</sup> Bowlby postulated that infants are dependent upon their primary caregivers not only for physical protection and nourishment, but also for emotional nourishment and a sense of safety. This safety between the infant and

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<sup>140</sup>Mary Main, Eric Hesse, and Nancy Kaplan, "Predictability of Attachment Behavior and Representational Processes at 1, 6, and 19 Years of Age," in *Attachment from Infancy to Adulthood: The Major Longitudinal Studies*, ed. Klaus E. Grossmann, Karin Grossmann, and Everett Waters (New York: Guilford Press, 2006), 252.

<sup>141</sup>John Bowlby, "Maternal Care and Mental Health" (Geneva: World Health Organization, 1951).

<sup>142</sup>Bowlby's claim has been supported in various studies. These include Harlow's study with young monkeys who cling to a terry cloth figure rather than a wire figure that has a bottle (H. F. Harlow, "The Nature of Love," *American Psychologist*, no. 13 [1958]: 673–85), and Spitz's research on orphans that showed infants provided for physically but lacking human interaction had a death rate of 75 percent (R. Spitz, "Hospitalism: An Inquiry into the Genius of Psychiatric Conditions in Early Childhood," *Psychoanalytic Study of the Child I* [1945]: 53–74.).

<sup>143</sup>John Bowlby, *Attachment and Loss*, 2nd ed., vol. 1 (New York: Basic Books, 1969).

<sup>144</sup>Konrad Lorenz, *King Solomon's Ring: New Light on Animal Ways*, trans. Marjorie Kerr Wilson (New York: Routledge, 2002).

caregiver—known as a secure attachment—is the foundation whereby the infant finds the sense of security necessary to leave the caregiver’s side and explore the world.

Advancements in technology and the field of neuropsychology have made even clearer the primary nature of attachment for human beings. Researchers have understood for some time now that attachment can affect gene expression and the neural structure.<sup>145</sup> Indeed, much like the development of vision for infants or the ability to learn a second language for toddlers, the process of attachment early in life activates and strengthens certain neural substrates that will shape a person’s emotional experiences later in life. For example, Coan, Allen, and McKnight, reading data on asymmetries in prefrontal activity of insecurely attached infants of depressed mothers, suggested that these infants already evidenced using avoidance as a strategy for affect regulation.<sup>146</sup> The framework of the nature versus nurture debate has crumbled as science has definitively shown that human development’s relationship to genetics and environment cannot be cast as either/or but both/and. The absolute necessity of external regulation via an attachment relationship for optimal neuronal development, particularly in the brain’s right orbitofrontal cortex, has been well documented.<sup>147</sup>

Attachment theorists understand that early attachment experiences with caretakers and the neurological and affective consequences of these experiences develop into an internal working model of self and others. Bowlby understood the internal working model to be based upon two independent variables: a judgment about the

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<sup>145</sup>Myron A. Hofer, “On the Nature and Consequences of Early Loss,” *Psychosomatic Medicine* 58, no. 6 (December 1996): 570.

<sup>146</sup>James A. Coan, John J. B. Allen, and Patrick E. McKnight, “A Capability Model of Individual Differences in Frontal EEG Asymmetry,” *Biological Psychology* 72, no. 2 (May 1, 2006): 198–207.

<sup>147</sup>See, for example, Schore, “Relational Trauma and the Developing Right Brain”; Susan M. Johnson, *Attachment Theory in Practice: Emotionally Focused Therapy (EFT) with Individuals, Couples, and Families* (New York: The Guilford Press, 2018); Philip J. Flores, *Addiction as an Attachment Disorder* (Lanham, MD: Jason Aronson, 2011).

dependability and responsiveness of the attachment figure, and a judgment about the worth of the self as the object to which one would respond in a positive way.<sup>148</sup> Over time, a consistent pattern emerges between infant and caretaker, and this teaches the infant what to expect in the relationship. Implied rules about staying in relationship with the caregiver are internalized by the infant, and these become guides for how the infant will think, feel, and behave in future significant relationships. Specifically, the internal working model shapes the strategies one employs in an attempt to achieve a feeling of relational security between the self and others.

These relational patterns have been conceptualized as attachment styles. Ainsworth's well-known study of children in the "strange situation" was foundational as an articulation of the four styles of attachment.<sup>149</sup> *Secure attachment* is developed when a caretaker shows awareness of a child's emotions and quickly attends to the child when distressed. The child perceives the caretaker as consistent in presence and provision. Securely attached children feel the freedom to explore their world because they have a sense of certainty that their caretakers are available when needed. Insecure attachment is subdivided into two styles: anxious-avoidant attachment and anxious-ambivalent attachment. *Anxious-ambivalent attachment* manifests in high levels of distress at the absence of a caretaker, as well as anger and anxiety upon the caretaker's return. The caregivers of anxious-ambivalent children do not attend to their children's emotional needs in consistent or appropriate ways. At times, these caregivers actually look to their children for support or a sense of worth and approval. Anxious-ambivalent children cling to their caregivers and do not exhibit a capacity for exploration. *Anxious-avoidant* children show little or no distress when separated from a caregiver and, upon the caregiver's return, will avoid contact. Their caregivers typically ignore or deflect requests

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<sup>148</sup>Bowlby, *Attachment and Loss*.

<sup>149</sup>Johnson, *Attachment Theory in Practice*, 18.

for comfort, maintain a greater degree of physical distance from the child, and sometimes only attend to the children based on achievement. In Ainsworth's study, these children did play with the toys, but with much less enthusiasm than those children with secure attachments. Later studies delineated the anxious-avoidant attachment into two different expressions, each distinguished according to its defenses (Bartholomew, 1990).<sup>150</sup> The *fearful-avoidant* has high anxiety about himself, desiring closeness but allowing fear of rejection and/or abandonment to prevent relational intimacy. The *dismissing-avoidant*, on the other hand, tend to view themselves more positively and others more negatively, believing others are not worthy of trust.

Important to attachment theory is the assumption that the experiences of childhood relationships shape adult attachment style. Those with a more secure attachment as children tend to have attachment security as adults; those from more unstable, insecure environments are more likely to exhibit insecurity.<sup>151</sup> A continuity has been found between child-caretaker relationships in childhood and intimate relationships between adults.<sup>152</sup> Ambivalently attached adults are typically "needy" in their relationships and are more likely to very quickly feel "in love" with another. They are preoccupied with their relationships, constantly pursuing assurance from their partners or friends. Adults with an avoidant attachment style, however, resist investing emotionally in and committing to relationships. But securely attached adults—those with a positive regard for self and others—are comfortable with both relationship and solitude, for they

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<sup>150</sup>Kim Bartholomew, "Avoidance of Intimacy: An Attachment Perspective," *Journal of Social and Personal Relationships* 7, no. 2 (May 1, 1990): 147–78.

<sup>151</sup>Main, Hesse, and Kaplan, "Predictability of Attachment Behavior and Representational Processes at 1, 6, and 19 Years of Age."

<sup>152</sup>Jeffrey A. Simpson et al., "Attachment and the Experience and Expression of Emotions in Romantic Relationships: A Developmental Perspective," *Journal of Personality and Social Psychology* 92, no. 2 (2007): 355–67.

have achieved the developmental goal of attachment: a capacity for effective dependency, which allows for healthy and simultaneous intimacy and autonomy.<sup>153</sup>

The basic premise attachment theory—that human beings are fundamentally wired for relationship and need relationships in order to survive and flourish—is supported by the Bible’s account of humanity. God declared it “not good” that man should be alone (Gen 2:18). The creation of humanity as gendered points to the incompleteness of man or woman in isolation and the “genuine mutuality and reciprocity.”<sup>154</sup> Empirical research has shown that the biological attachment system of the human body makes relationships possible not only with other human beings, but also with God; indeed, attachment capacities with caregivers in childhood and romantic partners in adulthood can predict one’s view of God and faith development.<sup>155</sup> In this embodied state, the internal working models of self and other—products of the attachment system embedded in neural circuitry—apply as equally to one’s relationship with God as to other human beings.<sup>156</sup>

**Basic anatomy of the brain and nervous system.** Despite the exponential strides of neuroscientific research in the last two decades, the complexity of the human nervous system and brain continues to prove mysterious at the level of its most intricate workings. A more broad understanding of the anatomy, organization, and functionality of the brain and human nervous system, however, has been gained through neurobiological

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<sup>153</sup>Johnson, *Attachment Theory in Practice*, 7.

<sup>154</sup>Jewett, *Man as Male and Female*, 35. See also Barth, *Church Dogmatics*, vol. 3.2, sections 43–44.

<sup>155</sup>Duane F. Reinert, “Spirituality, Self-Representations, and Attachment to Parents: A Longitudinal Study of Roman Catholic College Seminarians,” *Counseling and Values* 49, no. 3 (April 2005): 226–38; Jonathan T. Hart, Alicia Limke, and Phillip R. Budd, “Attachment and Faith Development,” *Journal of Psychology and Theology* 38, no. 2 (June 1, 2010): 122–28.

<sup>156</sup>Lauren E. Maltby and Todd W. Hall, “Trauma, Attachment, and Spirituality: A Case Study,” *Journal of Psychology and Theology* 40, no. 4 (2012): 303.

research and will prove helpful in the research questions to be undertaken in this study. Properly speaking, the brain is a part of the human nervous system. In this section, a basic overview of the human nervous system, its organization, anatomy, and functionality will be provided.

The human nervous system is made up of two parts (see figure 2), the central nervous system (CNS) and peripheral nervous system.<sup>157</sup> The CNS is made up of the

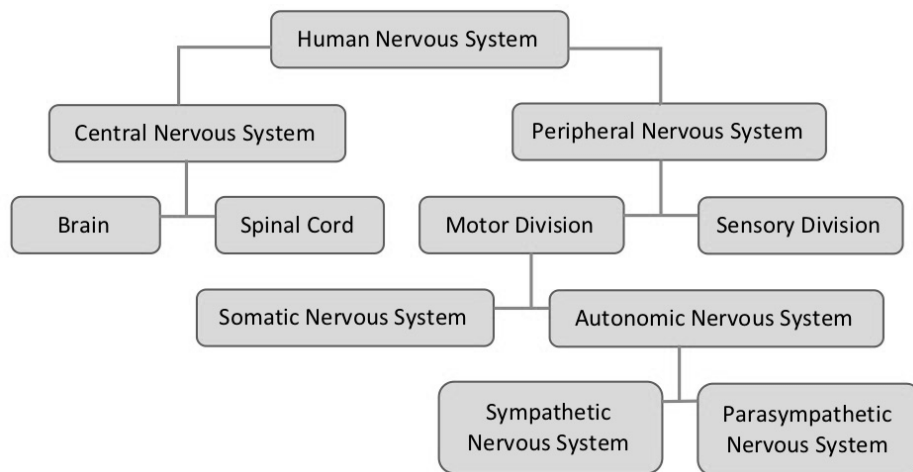


Figure 2. The human nervous system

brain and spinal cord. The brain is the central processing unit of the nervous system, which receives and stores information as memories and initiates responses of thought, emotion, and behavior. The spinal cord is the primary means by which signals are transmitted between the brain and body. The peripheral nervous system also has two divisions: the sensory division and motor division. The sensory division sends data perceived exteroceptively through the five senses and interoceptively through proprioception and vestibular sense from the sensory organs to the CNS. The motor division sends data from the CNS to the body's muscles and glands. This motor division

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<sup>157</sup>Arlene Montgomery, *Neurobiology Essentials for Clinicians: What Every Therapist Needs to Know*, Norton Series on Interpersonal Neurobiology (New York: W. W. Norton & Company, 2013), 2.



is composed of two systems: the somatic nervous system and the autonomic nervous system. The somatic nervous system controls voluntary muscle movements, and the autonomic nervous system (ANS) controls involuntary responses. The ANS can be further divided into two divisions: the sympathetic nervous system (SNS) and the parasympathetic nervous system (PNS). The SNS upregulates arousal, moving the nervous system toward a state of fight or flight; the PNS downregulates arousal, moving the nervous system toward a state of resting and digesting.

The brain can be divided vertically into three parts: the brainstem and cerebellum are the lower brain structures; the limbic system make up the central brain structures; and the neocortex makes up the upper brain structures.<sup>158</sup> The lower brain structures, also called the hindbrain, work automatically to sustain functioning.<sup>159</sup> The brain stem is responsible for maintaining respiration, vessel constrictions, heartbeat, temperature, and other basic life necessities, as well as some aspects of the fight–flight–freeze responses.<sup>160</sup> On top of the brain stem is the cerebellum, which works to coordinate movements and balance and give insights for motor control through its connectivity to all other areas of the brain.<sup>161</sup>

The limbic system is the seat of memory, appetite, emotion, and sensory experience. Found within the central structures of the brain, the limbic system is

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<sup>158</sup>Siegel, *The Developing Mind*, 16–17. Often referred to as the triune brain, this model for understanding the brain’s major divisions was first proposed in Paul D. MacLean and V. A. Kral, eds., *A Triune Concept of the Brain and Behaviour* (Toronto: University of Toronto Press, 1973). Based on an evolutionary philosophical framework, not all inferences from this model of brain organization can be accepted (i.e., the notion that the hindbrain is the most primitive part, shared with our reptilian ancestors). Despite involving evolutionary inferences that are incompatible with Christian metaphysics, the reality of the three major divisions is a physically established fact that Christians must accept in their quest to better understand the physical nature of the human life.

<sup>159</sup>Bonnie Badenoch, *Being a Brain-Wise Therapist: A Practical Guide to Interpersonal Neurobiology*, Norton Series on Interpersonal Neurobiology (New York: W. W. Norton & Co, 2008), 14.

<sup>160</sup>Siegel, *The Developing Mind*, 16.

<sup>161</sup>Stan Tatkin, “PACT Training Manual, Module Two: Attachment and Neuroscience” (Los Angeles: The PACT Institute, 2015), 64.

composed, in part, of the amygdala, hippocampus, and hypothalamus.<sup>162</sup> The amygdala is an almond shaped cluster of neurons that act as the center for mediating input from the external world and the brain's emotional response.<sup>163</sup> As such, the amygdala—which nonconsciously appraises incoming data for both importance and threat—plays an important role in the fight-or-flight response and is the base of implicit memory.<sup>164</sup> The amygdala is closely linked to the hippocampus, where data are assembled into explicit memory, including both facts and autobiographical knowledge, giving this neural structure a crucial part in the learning process.<sup>165</sup> Also linked to the amygdala is the hypothalamus, where the autonomic nervous system and neuroendocrine system continuously strive for homeostasis.<sup>166</sup> The hypothalamus is intricately and reciprocally connected to many other parts of the limbic system, hindbrain, and cortex, making it the primary hub in and out of the limbic system and giving it a prominent role in both sympathetic and parasympathetic activation.<sup>167</sup>

The neocortex, also called the cerebral cortex, is the highest of the brain's structures. Sitting atop the brain stem and wrapping around the limbic system, this outer layer makes possible capacities that are uniquely human.<sup>168</sup> The neocortex is made up of four lobes in each hemisphere, with increasingly complex integrative processing abilities

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<sup>162</sup>Badenoch, *Being a Brain-Wise Therapist*, 14.

<sup>163</sup>Siegel, *The Developing Mind*, 156.

<sup>164</sup>Badenoch, *Being a Brain-Wise Therapist*, 16.

<sup>165</sup>Badenoch, *Being a Brain-Wise Therapist*, 16; Siegel, *The Developing Mind*, 23; Montgomery, *Neurobiology Essentials for Clinicians*, 71–72.

<sup>166</sup>Montgomery, *Neurobiology Essentials for Clinicians*, 29; Badenoch, *Being a Brain-Wise Therapist*, 16.

<sup>167</sup>Tatkin, "PACT Training Manual," 73.

<sup>168</sup>Badenoch, *Being a Brain-Wise Therapist*, 17; Tatkin, "PACT Training Manual," 65.

as they move toward the front of the skull.<sup>169</sup> Stan Tatkin summarizes the power of the neocortex this way:

The new brain is what makes us uniquely human and sets us apart from all other species. Without it, we would not possess or even know about morality, reason, judgment, creativity, character and personality, sociability, choices, hope, empathy, remorse, romance, or love. Without it, we would not be able to rehearse, plan, predict, formulate, or reflect. Without it, we would know only survival and conflict, which are the primary domains of the [lower brain structures].<sup>170</sup>

The occipital lobe, also called the visual cortex, is located in the back of the brain and receives visual input directly from the optic nerve and integrates it into whole images.

The parietal lobes integrate non-visual sensory data, especially as it pertains to the body and movement. The temporal lobes are on the sides of the brain. These lobes are made up of both cortical and limbic structures, and integrate data about sounds and smells. The left temporal lobe is particularly involved in language functions, such as naming, verbal memory, and speech comprehension.<sup>171</sup> Finally, the frontal cortex is responsible for higher order, executive thinking, reasoning, judgment, and planning, as well as voluntary motor control. The right foremost portion, the right orbitofrontal cortex, is closely connected to limbic structures, making it instrumental in socioemotional processing and integral to interpersonal relationships.<sup>172</sup>

In addition to its tripartite vertical division of lower, middle and upper structures, the brain can also be divided horizontally into right and left hemispheres.<sup>173</sup> Despite mirroring one another in terms of anatomy (each has an amygdala, hippocampus, frontal lobe, etc.), the right and left hemispheres process information in significantly

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<sup>169</sup>Badenoch, *Being a Brain-Wise Therapist*, 17.

<sup>170</sup>Tatkin, "PACT Training Manual," 65.

<sup>171</sup>Badenoch, *Being a Brain-Wise Therapist*, 18.

<sup>172</sup>Siegel, *The Developing Mind*, 17; Badenoch, *Being a Brain-Wise Therapist*, 18.

<sup>173</sup>Siegel, *The Developing Mind*, 235–36.

different ways, so much so that they are often considered two separate brains meant to work in balance with one another.<sup>174</sup> Right-mode processing (RMP)—that is, process that primarily takes place in the right hemisphere—is very fast, holistic, non-linear, and based in the felt senses.<sup>175</sup> The right brain is particularly attuned to nonverbal signals, making it a key participant in social interactions. The right brain also possesses an integrated map of the whole body, as well as the autobiographical felt-sense experience of being one’s self. This greater connectivity to the body is literal: the right hemisphere contains significantly more neuropathways between the brain and body than the left hemisphere does.<sup>176</sup> Some mischaracterize the RMP as being wordless since the language centers are found in the left brain hemisphere, but this is not altogether true. Researchers have found that while reading a scientific text the left hemisphere is primarily activated, but while reading stories both right and left hemispheres are more active in processing the data.<sup>177</sup> Indeed, RMP is involved in the comprehension of metaphor, poetic language, and humor.

The left brain specializes in linear, sequential, logical thinking, using language to name and contain concepts. Left-mode processing (LMP) is often explanatory of experiential data coming from the right brain. LMP requires significantly more resources due to the complexity of linguistics—requiring phonological, lexico-semantic, and syntactic comprehension—which greatly slows down the speed of processing.<sup>178</sup> The left hemisphere is also much more oriented toward the external world, especially as

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<sup>174</sup>Badenoch, *Being a Brain-Wise Therapist*, 19; Schore, *Affect Regulation & the Repair of the Self*, 236.

<sup>175</sup>Siegel, *The Developing Mind*, 237.

<sup>176</sup>Schore, “Relational Trauma and the Developing Right Brain;” Ralph Adolphs et al., “A Role for Somatosensory Cortices in the Visual Recognition of Emotion as Revealed by Three-Dimensional Lesion Mapping,” *Journal of Neuroscience* 20, no. 7 (April 1, 2000): 2683–90.

<sup>177</sup>Ross Buck and C. Arthur VanLear, “Verbal and Nonverbal Communication: Distinguishing Symbolic, Spontaneous, and Pseudo-Spontaneous Nonverbal Behavior,” *Journal of Communication* 52, no. 3 (2002): 522–41.

<sup>178</sup>Tatkin, “PACT Training Manual,” 78.

compared to the right hemisphere's internal monitoring of the body's affect.<sup>179</sup> Whereas RMP would dominate taking in a vibrant piece of visual art, LMP breaks experiences into labelled parts and sequences them in cause-and-effect patterns, which may or may not be accurate.<sup>180</sup> Indeed, the left brain is somewhat notorious in the research literature for its proclivity for confabulations, seeking a sense of logical certainty about what has been or will be experienced.<sup>181</sup> Creating externally focused, logical, sequenced, explanatory narratives, even when the data is significantly limited, appears to be one of the left brain's primary defense mechanisms employed to provide a sense of safety and security.

These two ways of handling data, RMP and LMP, are designed to balance one another, and they do provide balance when the brain has developed optimally.<sup>182</sup> The LMP drive to make logical sense of experience is provided a felt-context by RMP, and the RMP of unbridled, holistic perception is tempered and contained by the sequencing and explanatory impulses of LMP. The limbic-cortical connections of the two hemispheres also balance one another in emotional processing: RMP handles emotions oriented toward avoidance or withdrawal, whereas LMP handles emotions oriented

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<sup>179</sup>T. A. Stroganova et al., "Functional Brain Asymmetry and Individual Differences in Hand Preference in Early Ontogeny," *Human Physiology* 30, no. 1 (January 1, 2004): 14–23; Siegel, *The Developing Mind*, 237.

<sup>180</sup>Siegel, *The Developing Mind*, 237; Badenoch, *Being a Brain-Wise Therapist*, 19.

<sup>181</sup>M. Bozzali et al., "Left Prefrontal Cortex Control of Novel Occurrences during Recollection: A Psychopharmacological Study Using Scopolamine and Event-Related fMRI," *NeuroImage* 33, no. 1 (October 15, 2006): 286–95; Guido Gainotti, "Emotions, Unconscious Processes, and the Right Hemisphere," *Neuropsychanalysis* 7, no. 1 (January 1, 2005): 71–81; William Hirstein, *Brain Fiction: Self-Deception and the Riddle of Confabulation* (Cambridge, MA: MIT Press, 2005); Christopher J. A. Moulin et al., "Disordered Memory Awareness: Recollective Confabulation in Two Cases of Persistent Déjà Vecu," *Neuropsychologia* 43, no. 9 (January 1, 2005): 1362–78.

<sup>182</sup>Badenoch, *Being a Brain-Wise Therapist*, 20.

toward approach.<sup>183</sup> Hemispheric specialization, which is not found in most animal brains, allows humans more diverse and higher-level processing.<sup>184</sup>

The peripheral nervous system has two divisions: sensory and motor.<sup>185</sup> The sensory division sends exteroceptive and interoceptive data upward to the brain from the body. The motor division is composed of the somatic nervous system, which receives data from the brain for the voluntary movement of muscles, and the autonomic nervous system, which receives data from the brain for the involuntary activation of glands and muscles. The autonomic nervous system (ANS) is of particular importance in the regulation of the affect, working closely in conjunction with the amygdala, parts of the prefrontal cortex, and especially the hypothalamus to keep the body in a state of relative homeostasis.<sup>186</sup> The ANS is made up of two branches that are related somewhat like the accelerator and brake pedals of a car. The sympathetic nervous system (SNS) acts as the accelerator, upregulating the body toward a fight-or-flight response; the parasympathic nervous system (PNS) acts as the brakes, downregulating the body toward a state of collapse.<sup>187</sup>

The ANS is continually at work in the body's primary affect, which is a non-verbal representation of the somatically felt sense of an organism's state.<sup>188</sup> Affect is constructed along two dimensions: hedonic tone (also called valence) and level of arousal

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<sup>183</sup>Richard J. Davidson, Daren C. Jackson, and Ned H. Kalin, "Emotion, Plasticity, Context, and Regulation: Perspectives from Affective Neuroscience," *Psychological Bulletin* 126, no. 6 (2000): 890–909; Heather L. Urry et al., "Making a Life Worth Living: Neural Correlates of Well-Being," *Psychological Science* 15, no. 6 (June 1, 2004): 367–72; Siegel, *The Developing Mind*, 237.

<sup>184</sup>Louis Cozolino, *The Neuroscience of Human Relationships: Attachment and the Developing Social Brain*, 2<sup>nd</sup> ed. (New York: W. W. Norton & Company, 2014), 17–18.

<sup>185</sup>Montgomery, *Neurobiology Essentials for Clinicians*, 2.

<sup>186</sup>Badenoch, *Being a Brain-Wise Therapist*, 20–21.

<sup>187</sup>Siegel, *The Developing Mind*, 311.

<sup>188</sup>Hill, *Affect Regulation Theory*, 5.

or intensity.<sup>189</sup> Affect can be conscious or non-conscious, and it involves a continuous mapping of the body's state by the limbic system for the purpose of regulating the body.<sup>190</sup> The window of tolerance refers to the range of affective intensity that an individual's system can endure without the body entering a state of dysregulation (see Figure 3).<sup>191</sup> In the presence of threat or if the SNS is hyperactive, an individual can be moved into a state of hyperarousal in which he or she becomes hyperaroused, hypervigilant, and stuck in a state of fight-or-flight. With too much PNS activity, an individual can be moved into a state of hypoarousal in which he or she becomes shut down, withdrawn, numb, and dissociative.

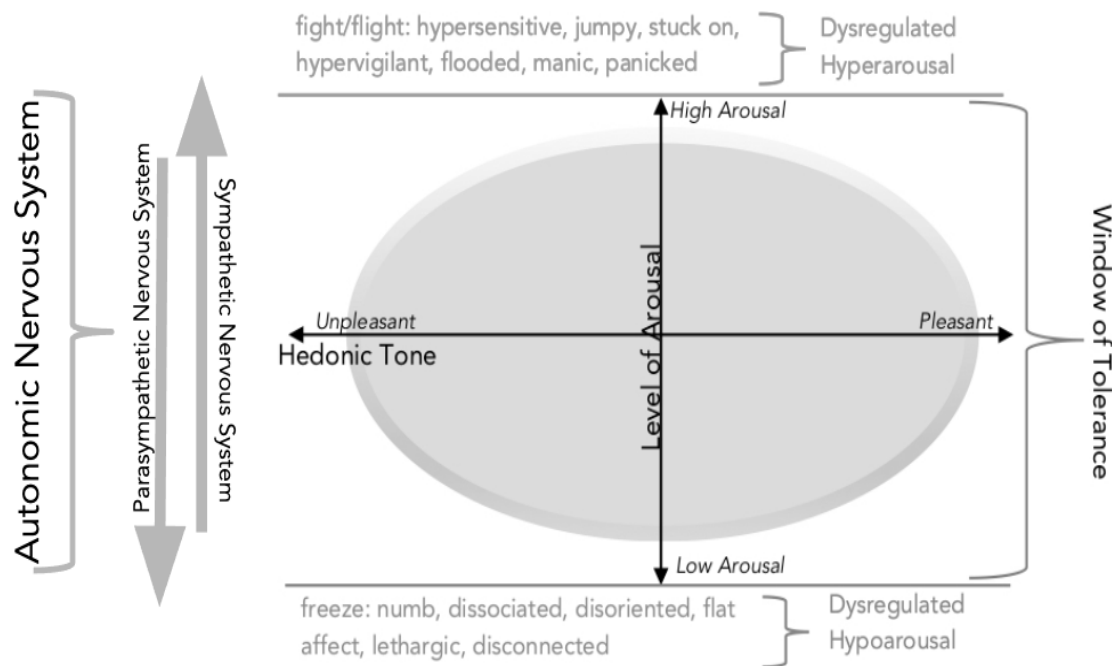


Figure 3. Dimensions of affect and the window of tolerance

<sup>189</sup>Barrett, *How Emotions Are Made*, 72.

<sup>190</sup>Hill, *Affect Regulation Theory*, 6.

<sup>191</sup>Siegel, *The Developing Mind*, 281.

**Developmental neuroscience.** Developmental neuroscience is the subfield of brain science that studies patterns of neurobiological growth and development of infants, children, adolescents, and adults.<sup>192</sup> A crucial finding from research in this field is that a child’s environmental and relational experiences, even while in utero, have a direct effect on the neural development of the brain and neuroendocrine system, which in turn has an effect on behavior.<sup>193</sup> Social–emotional functioning is largely made up of mechanistic outworkings of implicit, nonverbal memory networks of the brain and nervous system, often encoded during the earliest stages of life.<sup>194</sup>

During the first three years of life, the brain’s right hemisphere is prioritized developmentally and dominant functionally, likely due to its requirement for human survival at this stage.<sup>195</sup> The type of processing done by the right hemisphere—holistic, nonlinear, fast, somatic, and social—is most crucial to infants at this early stage of development.<sup>196</sup> Development of critical brain structures and neuropathways takes place within the first eighteen months of postnatal life, especially those related to social–emotional acuity.<sup>197</sup> In optimal circumstances, an infant, unable at this point to self–regulate his or her affect, is provided assistance by an attuned caregiver in the processing of both external–environmental and internal–affective sensory data. This process between the infant and caregiver works to scaffold neural development between the right

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<sup>192</sup>Ross Buck and C. Arthur VanLear, “Verbal and Nonverbal Communication: Distinguishing Symbolic, Spontaneous, and Pseudo-Spontaneous Nonverbal Behavior,” *Journal of Communication* 52, no. 3 (2002): 522–41.

<sup>193</sup>Schore, *The Science of the Art of Psychotherapy*, 9.

<sup>194</sup>Schore, “Relational Trauma and the Developing Right Brain.”

<sup>195</sup>C. Chiron et al., “The Right Brain Hemisphere Is Dominant in Human Infants,” *Brain* 120, no. 6 (June 1, 1997): 1057–65; Siegel, *The Developing Mind*, 245.

<sup>196</sup>Siegel, *The Developing Mind*, 178, 256.

<sup>197</sup>Schore, *Affect Dysregulation & Disorders of the Self*.



orbitofrontal cortex and limbic system,<sup>198</sup> as the attuned mirroring and regulating behaviors of the caregiver toward the infant work to both organize and provide meaning for the infant's experience.<sup>199</sup> In a very literal way, the neural substrates that make up one's sense of self are developed in the context of relationships in which meaning and structure is downloaded from an outside brain into our own.<sup>200</sup> Articulating a bridge between developmental neurobiology and attachment theory via the process of affect regulation, Allan Schore's research makes the case that "the transmission of secure attachment has been effected through implicit communications of affect":<sup>201</sup>

There has been an intergenerational transmission of secure attachment in the form of the capacity to manage negative affect and shift efficiently from dysregulated to regulated states. The primary affect-regulating system of the attachment figure is internalized by the infant.<sup>202</sup>

The scaffolding experience of right-brain-to-right-brain connection embeds into the infant's right brain implicit and procedural knowledge related to facial expressions, vocal tones, emotional processing, affect regulation, and various other socioemotional components that play a vital role in one's sense of self and other. Problems in development of crucial right brain neural structures occur if infants within this critical period between birth and 18 months are not provided the attentive, attuned responsiveness of a caregiver. Without consistent right-brain-to-right-brain connection via eye contact, mirroring, and skin-to-skin contact, these developing minds undergo higher than normal rates of neuronal pruning, called apoptosis, and can begin to exhibit

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<sup>198</sup>Hill, *Affect Regulation Theory*, 114–15.

<sup>199</sup>Allan N. Schore and Judith R. Schore, "Modern Attachment Theory: The Central Role of Affect Regulation in Development and Treatment," in *The Science of the Art of Psychotherapy*, Norton Series on Interpersonal Neurobiology (New York: W. W. Norton & Company, 2012).

<sup>200</sup>Johnson, *Attachment Theory in Practice*, 28.

<sup>201</sup>Hill, *Affect Regulation Theory*, 126.

<sup>202</sup>Hill, *Affect Regulation Theory*, 126.

symptoms of failure-to-thrive.<sup>203</sup> Of course, the severity of consequences for infant neglect or deprivation range from slight to severe deficits in capacities such as emotional intelligence, reading facial cues, empathic attunement, affect blindness, alexithymia, theory of mind, somatosensory awareness, attachment, sequencing of time and space, and impulse control.<sup>204</sup> Such deficits could be compensated for by the left hemisphere, but these compensations will likely not be as accurate or fast as would optimal right hemisphere processing.

Beginning at approximately age two with the onset of language and speech abilities, the brain's memory system is reorganized to begin including more left brain functionality.<sup>205</sup> Functionally, a shift takes place from a nearly exclusive right brain implicit, process-oriented, and fast operating system to one that includes a much slower left brain system that makes use of explicit and declarative memory. Ideally, optimal development of the two hemispheres creates a left-right balance that spares the body's whole nervous system from navigating life and relationships with either inadequate socioemotional functioning leading to left brain-oriented overly analytical defenses or right brain-oriented overactive emotionally driven reactivity.<sup>206</sup> Yet the bihemispheric system which results from optimal development retains a greater dependence on right brain processes (see Figure 4).<sup>207</sup> Data based on the body's primary affect travels via the

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<sup>203</sup>Dante Cicchetti and W. John Curtis, "An Event-Related Potential Study of the Processing of Affective Facial Expressions in Young Children Who Experienced Maltreatment during the First Year of Life," *Development and Psychopathology* 17, no. 3 (2005): 641–77; Michael D. De Bellis, "The Psychobiology of Neglect," *Child Maltreatment* 10, no. 2 (2005): 150–72.

<sup>204</sup>Marion Solomon and Stan Tatkin, *Love and War in Intimate Relationships: Connection, Disconnection, and Mutual Regulation in Couple Therapy* (New York: W. W. Norton & Company, 2011), 207–13.

<sup>205</sup>Tatkin, "PACT Training Manual," 61.

<sup>206</sup>Alexandra Katehakis, *Sex Addiction as Affect Dysregulation: A Neurobiologically Informed Holistic Treatment*, The Norton Series on Interpersonal Neurobiology (New York: W.W. Norton & Company, 2016), 55.

<sup>207</sup>Hill, *Affect Regulation Theory*, 74–75.

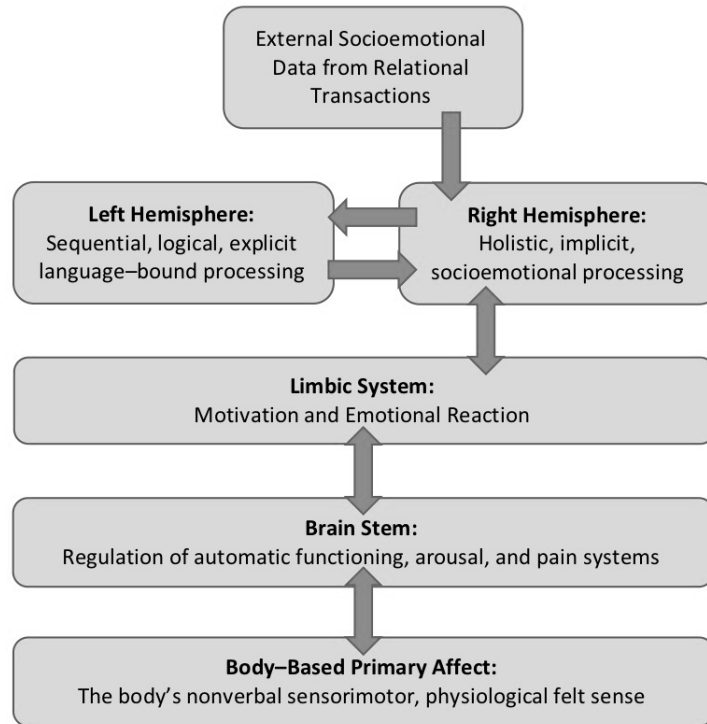


Figure 4. Processing in the right and left orbitofrontal cortex

brainstem to the subcortical level of the right limbic system. Once processed subcortically, the physioaffective data travels upward to the right orbitofrontal cortex, where it is integrated with incoming socioemotional data from relational transactions. After this processing, the data, now a biopsychosocioemotional bundle, is then passed through the corpus callosum to the left hemisphere, where it will be processed through serial, language-based, conscious thinking. Finally, the data is handed back to the right brain for complex integration.

The implications of this research from developmental neuroscience have importance for anyone whose work involves the growth or transformation of individuals, including educators, therapists, pastors, medical doctors, coaches, and more. Western educational philosophies, especially since the time of the Industrial Revolution, have tended to favor LMP, with an emphasis on the dissemination of explicit knowledge that is

linguistically and logically bound.<sup>208</sup> What is now understood is that the brain's right hemisphere is constantly running in the background, processing incoming socioemotional data, seeking relational safety and security, and influencing the way in which the left hemisphere is interpreting and consolidating explicit memory. Deficits in the right orbitofrontal cortex from early childhood experiences will seriously affect an individual's ability to fully integrate knowledge.<sup>209</sup> The notion of *knowing* something in one's *head* but not in one's *heart* is nearly universal: not *feeling* as true something one knows to be true, or not *behaving* as if something is true despite *knowing* it to be true. These disintegrated–dissociative experiences can often be explained by right brain deficits in integrative capacity of the brain's hemispheres. This deficit results in an impaired ability to regulate one's affective state, which in turn leads to cognitive–behavioral reactions that are out of place with one's normal system of beliefs and values.

Deficits in development, however, do not have to define one's life. Certain new experiences can introduce changes to the patterns of energy and information flow within the brain leading to both structural and functional modifications in neural integration.<sup>210</sup> This capacity for changing the brain's structure is called neuroplasticity. Two of the most critical processes involved in neuroplasticity are synaptogenesis and neurogenesis. Synaptogenesis is the creation of new synaptic connections or the modification of previously established connections. When a new experience creates or modifies existing brain circuitry and is repeated over time, the new or modified circuits become more dense and change the structure of the brain's neural pathways.<sup>211</sup> One fascinating study by

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<sup>208</sup>Cozolino, *The Neuroscience of Human Relationships*, xvi, 3.

<sup>209</sup>Allan N. Schore, "Dysregulation of the Right Brain: A Fundamental Mechanism of Traumatic Attachment and the Psychopathogenesis of Posttraumatic Stress Disorder," *Australian and New Zealand Journal of Psychiatry* 36, no. 1 (February 1, 2002): 9–30.

<sup>210</sup>Daniel J. Siegel, "An Interpersonal Neurobiology Approach to Psychotherapy," *Psychiatric Annals* 36, no. 4 (April 1, 2006): 248–58.

<sup>211</sup>Sara W. Lazar et al., "Meditation Experience Is Associated with Increased Cortical

Hariri, Bookheimer, and Mazziotta utilized an fMRI to observe brain functioning in response to threatening images of human faces.<sup>212</sup> When shown a picture of an angry or frightened face, both left and right amygdalae activated a threat response. However, when participants were coached to identify and name the expressions in the image—a RMP task involving the conscious interpretation of socioemotional cues—the balance of energy shift from the amygdalae to the right prefrontal cortex. Repeating this practice of responding to implicit threats by making them explicit can modify the brain’s procedural circuitry such that individuals automatically react to such threats in more functional, brain-balanced ways.

Neurogenesis refers to the brain’s capacity to create new neurons. Certain new experiences—such as exercise, mindfulness, and somatically based psychotherapy—cause neuronal stem cells to split and create a new cell. This process takes some time. Song, Stevens, and Gage reported findings that newborn neurons in the hippocampus had axons allowing for electrical transmissions after one month and thick dendritic connections for receiving environmental input after four months.<sup>213</sup> These findings provide great hope for those with developmental deficits. Those who lack full capacity for regulation of their affective state due to right orbitofrontal deficits can be joined by another person in a process of co-regulation, which, if repeated again and again, can over time induce neurogenesis leading to an increased capacity for self-regulation.<sup>214</sup> This is

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Thickness,” *Neuroreport* 16, no. 17 (November 28, 2005): 1893–97.

<sup>212</sup>Ahmad R. Hariri, Susan Y. Bookheimer, and John C. Mazziotta, “Modulating Emotional Responses: Effects of a Neocortical Network on the Limbic System,” *NeuroReport* 11, no. 1 (January 17, 2000): 43.

<sup>213</sup>Hongjun Song, Charles F. Stevens, and Fred H. Gage, “Astroglia Induce Neurogenesis from Adult Neural Stem Cells,” *Nature* 417, no. 6884 (May 2002): 39–44.

<sup>214</sup>Schore, *Affect Dysregulation & Disorders of the Self*, 31.

thought by some to be the biophysiological mechanism at work in effective psychotherapy.<sup>215</sup>

### **The Embodied Mind and Christian Spiritual Formation**

Daniel Siegel worked with an interdisciplinary group of more than forty scientists to develop a concept of the mind that could be shared across their fields. The mind, according to Siegel and his colleagues, should be understood within a framework made up of these three principles:

1. A core aspect of the human mind is an embodied and relational process that regulates the flow of energy and information within the brain and between brains.
2. The mind as an emergent property of the body and relationships is created within internal neurophysiological processes and relational experiences. In other words, the mind is a process that emerges from the distributed nervous system extending throughout the entire body, and also from the communication patterns that occur within relationships.
3. The structure and function of the developing brain are determined by how experiences, especially within interpersonal relationships, shape the genetically programmed maturation of the nervous system.<sup>216</sup>

Bringing together attachment theory, developmental neuroscience, and neuropsychology, affective social neurobiology shows that the human mind, while dependent upon the brain, is neither identical to it or contained by it. The human mind takes into account experiential data from outside the brain, including not only one's body but also interactions with other bodies. This study is concerned with the formation of this somatically embodied mind, and especially exploring the extent to which its *spiritual* formation relates to affective social neurobiological processes. This will involve a brief introduction to the following domains with the field of affective social neurobiology: the

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<sup>215</sup>Schore, *Affect Regulation & the Repair of the Self*; Schore, *The Science of the Art of Psychotherapy*; Cozolino, *The Neuroscience of Human Relationships*; Siegel, "An Interpersonal Neurobiology Approach to Psychotherapy"; Badenoch, *Being a Brain-Wise Therapist*; Montgomery, *Neurobiology Essentials for Clinicians*.

<sup>216</sup>Siegel, *The Developing Mind*, 3.

attachment system; memory; emotion; regulation and integration of self-states; traumatic stress, dysregulation, and disintegration; and healing relational experiences.

**The attachment system.** From early infancy, babies seek out attachment relationships with mature brains to help their immature brains organize mental processes and stabilize in times of distress.<sup>217</sup> The quality of these attachment relationships and the resulting organization of mental processes has been found to be associated with one's capacities for emotional regulation, social connection, autobiographical memory, and self-reflection.<sup>218</sup> Attachment relationships are conceptualized as being either secure or insecure, and organized or disorganized.<sup>219</sup> Secure, organized attachment patterns are typical of those who have greater health overall; insecure, disorganized attachment patterns are typical of those who develop psychological and physical pathologies.

The attachment system continues to operate throughout the lifespan, which means that adults are just as hardwired to seek out relational proximity as infants.<sup>220</sup> Feeling emotionally connected with another person—whether family, friend, spouse, or even spiritual figure—has a calming effect on the nervous system. When early childhood is filled with safe relational experiences, one comes to expect safety in relationships going into adulthood; similarly, if early childhood is marked by unsafe relational experiences, one will likely experience relationships in adulthood as unsafe. Repeated relational interactions become encoded in implicit procedural memory (discussed in more

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<sup>217</sup>Myron A. Hofer, "Psychobiological Roots of Early Attachment," *Current Directions in Psychological Science* 15, no. 2 (2006): 84–88.

<sup>218</sup>Main, Hesse, and Kaplan, "Predictability of Attachment Behavior and Representational Processes at 1, 6, and 19 Years of Age"; Cicchetti and Curtis, "An Event-Related Potential Study of the Processing of Affective Facial Expressions in Young Children Who Experienced Maltreatment during the First Year of Life."

<sup>219</sup>Siegel, *The Developing Mind*, 92.

<sup>220</sup>Johnson, *Attachment Theory in Practice*, 6.

detail below), resulting in patterns of interactions that reinforce negative or positive messages about one's self and others.

The very existence of the attachment system and its place as a primary driver in human development speaks to the fundamentally relational character of human beings. The embodied mind is at the most basic level a *social* construction, birthed and sustained in relationships. The neurophysiology of human beings mirrors the biblical view of humanity as a psychosomatic unity embedded in relationships. Our cognitions, emotions, affect, and even identities are intricately woven together as we live out social, embodied experiences in which the interplay of mind, brain, and body cannot be purely abstracted from one another. God created humans in his image to flourish in the context of relationships marked by secure attachment or, more simply put, by steadfast love.<sup>221</sup> Secure attachments yield the development of affect regulation skills, including emotional stability, distress tolerance, empathy, interpersonal skills, impulse control, and more. These are strikingly similar to those virtues Christians are called to embody.<sup>222</sup> Any meaningful spiritual formation will involve one's relationship to God, to others, to the world, and to one's self.

**Memory.** The function of memory for the embodied mind is to create a mental representation of the past, the present, and the anticipated future.<sup>223</sup> Siegel defines

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<sup>221</sup>Richard Langer, Jason McMartin, and Elizabeth M. Lewis Hall, "Theological Perspectives on Trauma: Human Flourishing After the Fall," in *Treating Trauma in Christian Counseling*, ed. Heather Davediuk Gingrich and Fred C. Gingrich, Christian Association for Psychological Studies (CAPS) (Downers Grove, IL: InterVarsity Press, 2017).

<sup>222</sup>For an interesting discussion on the relationship between faith in Jesus Christ and universal human flourishing, see Stephen J. Pope, "Jesus Christ and Human Flourishing: An Incarnational Perspective" (New Haven, CT: Yale Center for Faith & Culture, 2014).

<sup>223</sup>Daniel L Schacter and Donna Rose Addis, "The Cognitive Neuroscience of Constructive Memory: Remembering the Past and Imagining the Future," *Philosophical Transactions of the Royal Society. Series B: Biological Sciences* 362, no. 1481 (2007): 773–86.



memory as “the way past events affect future function.”<sup>224</sup> In the brain, memories are actually patterns of neural activation that the brain has undergone before. When neural networks are activated in a particular way, they are more likely to be activated in that same way again. This means repeated experiences that stimulate repeated patterns of neural activation result in an increased probability for that pattern being activated by a related stimulus. These activations of neural patterns in the brain are experienced by the mind as memories. Yet because the brain is in a constant state of change, a pattern of neural activation is never duplicated in the *exact* same way more than once. Additionally, patterns become linked together with other patterns, forming associations of their corresponding mental representations.<sup>225</sup>

Memories can be implicit or explicit. Implicit memory, which is also referred to as procedural memory, begins in utero.<sup>226</sup> Implicit memories are encoded by parts of the brain that do not require conscious processing: the amygdala and other limbic structures, the motor cortex, orbitofrontal cortex, and more.<sup>227</sup> Repetition encodes implicit memory, and when activated no felt-sense of remembering is experienced.<sup>228</sup> An example of implicit memory is playing scales on a piano. While learning, one might struggle to recall and then act upon fingering patterns, techniques on striking the keys, and which sharps or flats belong in a particular key. But once the process of playing scales has been encoded in implicit, procedural memory, one can sit at a piano and

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<sup>224</sup>Siegel, *The Developing Mind*, 46.

<sup>225</sup>Siegel, *The Developing Mind*, 50–51.

<sup>226</sup>Hill, *Affect Regulation Theory*, 77.

<sup>227</sup>Joel L. Voss and Ken A. Paller, “Brain Substrates of Implicit and Explicit Memory: The Importance of Concurrently Acquired Neural Signals of Both Memory Types,” *Neuropsychologia* 46, no. 13 (November 1, 2008): 3021–29; Siegel, *The Developing Mind*, 51.

<sup>228</sup>Hill, *Affect Regulation Theory*, 77.

“automatically” play a scale in D minor without a conscious experience of “remembering.” The evidence of the memory is in the action being performed.

The building blocks of implicit memory are called mental models or schemata, which are mental generalizations that represent the repeated experiences being encoded implicitly.<sup>229</sup> The construction of mental models allows the brain to assess present stimuli and predict future events. For example, if a woman grew up with lots of dogs and had pleasant experiences with them, she likely has a mental model that activates warm feelings of joy upon the sight of a four-legged furry creature named Fido. Similarly, if a man had an unpleasant experience with dogs, the same stimuli may activate in him a fight-or-flight response. These responses are automatic, being initiated in a preconscious or nonconscious state neurobiologically.

Among the most important mental models that all people possess are those that represent relationships and relational patterns. Starting in infancy, mental models of relationships begin to be encoded and associated with the attachment system. As a result, even into adulthood, certain relational cues may activate implicit memory networks affecting our entire affective state.<sup>230</sup> Sue Johnson explains, “Secure connection is a function of key interactions in bonded relationship and how individuals *encode patterns of interaction into mental models* or protocols for responding.”<sup>231</sup> The opposite is true, as well. Insecure connections can cultivate mental models of relationships that lead to destructive patterns and beliefs. Johnson again explains, “These models, in their most unbending and automatic form, can distort perceptions in interactions and so bias

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<sup>229</sup>Siegel, *The Developing Mind*, 52.

<sup>230</sup>Hill, *Affect Regulation Theory*, 78.

<sup>231</sup>Johnson, *Attachment Theory in Practice*, 7. Emphasis in the original.

response. They are experienced as reality, as ‘just the way things are,’ rather than constructed.”<sup>232</sup>

Explicit memory, also called declarative memory, emerges with developments that occur around the second year after birth, when the brain’s medial temporal lobe, parietal, and orbitofrontal cortex have undergone a greater degree of maturation.<sup>233</sup> The hippocampus assigns to experiences an association with a space in time and associates the experience with a level of emotional salience.<sup>234</sup> Explicit memories require focal attention to be encoded and are accompanied by a felt-sense of remembering. Semantic explicit memory refers to the ability to recall propositional facts. Autobiographical explicit memory, also called episodic memory, refers to one’s sense of self across time. The sense of self begins to emerge with the development of frontal cortical brain regions and is mediated interpersonally as caregivers dialogue with children about shared external experiences and the simultaneous internal, subjective experience. Siegel summarizes, “In other words, our relationships not only shape what we remember, but how we remember and the very sense of self that remembers.”<sup>235</sup>

Christian spiritual formation requires not only the engagement of explicit memory in the learning of the propositional truths of the gospel, but also the engagement of the implicit memory in the reconstruction of one’s affections, desires, attitudes, and fundamental orientation to both self and the world.<sup>236</sup> Daniel Hill writes, “We are overwhelmingly and most basically implicit beings. Alterations to implicit memory

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<sup>232</sup>Johnson, *Attachment Theory in Practice*, 8.

<sup>233</sup>Siegel, *The Developing Mind*, 55–56.

<sup>234</sup>Hill, *Affect Regulation Theory*, 76.

<sup>235</sup>Siegel, *The Developing Mind*, 56.

<sup>236</sup>See chap. 9, “Formed in Thinking, Feeling, and Acting,” in Howard, *A Guide to Christian Spiritual Formation*. Though Howard does not utilize the terminology from neuropsychology employed here, his content deals with the same concepts: thinking, feeling, choosing, acting, and willing.

systems are changes of the most basic kind—changes to the way we are, changes to our implicit selves.”<sup>237</sup> Here linkage to Mezirow’s transformative learning theory can be seen. Transformative learning takes place when a student’s previously implicit assumptions and mental models have been made explicit and are being challenged by another’s assumptions or models. James K. A. Smith’s proposal of humans as *homo liturgicus*, “embodied, practicing creatures whose love/desire is aimed at something ultimate,” is also relevant at this point.<sup>238</sup> To bring about formation that reaches beyond the explicit memory system into the implicit memory system, one must embody something different. A purely cognitive model of theological education would be concerned only with filling up one’s explicit memory, but Christian spiritual formation will undertake a reformation of the whole person, the somatically embodied mind, including both explicit and implicit memory systems.

**Emotion.** With an understanding of the embodied mind, emotions are far more than mere feelings, whims, or passions. Decades ago, Nico Frijda articulated an understanding of emotion as an advanced processing system that integrates an individual’s present environment, predicted outcomes of particular actions, and innate needs and desires.<sup>239</sup> Bowlby, father of attachment theory, argued that emotions are primarily designed to produce an awareness of one’s needs, motives, and priorities for one’s self and others.<sup>240</sup> Emotion adds a felt-sense to the experience of knowledge, working to provide a somatically motivated focusing of the mind’s attention and

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<sup>237</sup>Hill, *Affect Regulation Theory*, 78.

<sup>238</sup>Smith, *Desiring the Kingdom*, 40.

<sup>239</sup>Nico H. Frijda, *The Emotions* (Cambridge: Cambridge University Press, 1986), 4.

<sup>240</sup>John Bowlby, postscript, in *Attachment Across the Lifespan*, ed. C. M. Parkes, J. Stevenson-Hinde, and P. Marris (New York: Routledge, 1991), 293–97.

somatically informed interpretation of the mind's understanding.<sup>241</sup> Emotions are the basis for action, serving as motivating impulses for the body's behaviors, which in turn signal to others both how we are feeling and how they should respond to us.<sup>242</sup> Siegel summarizes the concept of emotion as representations of "dynamic processes created within the socially influenced, value-appraising processes of the brain."<sup>243</sup>

The vast majority of emotional processes are taking place nonconsciously, with the amygdala coordinating data from throughout the body, brain, and environment and then sending it back into the whole brain in such a way that it affects everything from physiological responses to abstract conceptualization.<sup>244</sup> The amygdala's appraisal can so influence the processing of the rest of the brain that data that would not normally be perceived as threatening or pleasurable is deemed to be so.<sup>245</sup> Emotions are developed within the brain's limbic circuitry as external or internal stimuli are appraised as good or bad, safe or dangerous, and then lead to the impulse to either approach or avoid.<sup>246</sup> The appraisal is based both on the embodied felt-sense registered within an individual's primary affect—often due to linkages from memories of similar past stimuli—and on the present social cues being monitored within the immediate environment.<sup>247</sup> Along with appraisal, emotion provides meaning to incoming data. Some stimuli have an inborn

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<sup>241</sup>Johnson, *Attachment Theory in Practice*, 35.

<sup>242</sup>Panksepp, *Affective Neuroscience*.

<sup>243</sup>Siegel, *The Developing Mind*, 148.

<sup>244</sup>Edmund T. Rolls and Fabian Grabenhorst, "The Orbitofrontal Cortex and beyond: From Affect to Decision-Making," *Progress in Neurobiology* 86, no. 3 (November 1, 2008): 216–44.

<sup>245</sup>Jacek Dębiec and Joseph LeDoux, "The Amygdala Networks of Fear: From Animal Models to Human Psychopathology," in *Current Perspectives on the Anxiety Disorders: Implications for DSM-V and Beyond*, Publisher, ed. Dean McKay, Steven Taylor Abramowitz, and Gordon J. G. Asmundson (New York: Springer, 2009), 107–26.

<sup>246</sup>Siegel, *The Developing Mind*, 149.

<sup>247</sup>Siegel, *The Developing Mind*, 156.

appraisal and value, such as eye contact and the human face.<sup>248</sup> The valuation or meaning-making processes for a particular stimuli are built upon past action, learning, and development.<sup>249</sup> Researchers have identified six basic emotions, half of which evoke an approach response while the other half evokes avoidance.<sup>250</sup> The approach emotions include joy, surprise, and anger; the avoidance emotions include shame, fear, and sadness. When the brain's limbic structures produce an emotional response, the body is prepared for approach or avoidance in some fashion. Emotion focuses our attention, appraises incoming data, assigns it meaning, and then motivates behavior.<sup>251</sup>

One's affections—that is, one's emotionally-based desires—have been considered the seat of true Christian spirituality by many since its inception. After Jesus spoke of the need to love God with one's whole being (Matt 22:37), Peter assumed that the normal state of Christian existence is to “love him” and “rejoice with joy that is inexpressible and filled with glory” (1 Pet 1:8–9). Augustine argued that love of God and neighbor is the ultimate aim of Christian formation, and Jonathan Edwards wrote about the affections as the mark of genuine Christian spirituality. Affective social neurobiology now has a body of research which demonstrates the fundamental role that affective and emotional experiences have in the shaping of one's desires, evaluations, cognitions, and behaviors. Christian spiritual formation must reach to the level of what one feels in order to affect how one thinks and lives. Smith addresses implications for Christian education,

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<sup>248</sup>James V. Haxby, Elizabeth A. Hoffman, and M. Ida Gobbini, “Human Neural Systems for Face Recognition and Social Communication,” *Biological Psychiatry* 51, no. 1 (2002): 59–67.

<sup>249</sup>Jonathan Posner, James A. Russell, and Bradley S. Peterson, “The Circumplex Model of Affect: An Integrative Approach to Affective Neuroscience, Cognitive Development, and Psychopathology,” *Development and Psychopathology* 17, no. 3 (September 2005): 715–34.

<sup>250</sup>Johnson, *Attachment Theory in Practice*, 36.

<sup>251</sup>Jaak Panksepp and Lucy Biven, *The Archaeology of Mind: Neuroevolutionary Origins of Human Emotions* (New York: W. W. Norton & Company, 2012).

which must set within its aim the formation of particular desires or affections in students.<sup>252</sup>

**Regulation and integration of self-states.** One's attachment system, memory system, and emotional system come together with a set of cognitive systems in the creation and regulation of self-states.<sup>253</sup> The embodied mind is experienced in self-states, which are composites of simultaneous somatic and cognitive processes. Siegel defines a self-state as "the total pattern of activations in the brain at a particular moment in time."<sup>254</sup> Self-states can be regulated-integrated or dysregulated-dissociated.<sup>255</sup> Every person has a set of self-states. For example, one may have a particular self-state activated while in the workplace and another activated while with family. Individuals have one way of affective and cognitive processing states of fear, and another of processing states of joy. Each self-state is composed of a pattern of neural activation with specific ways of perceiving cues, regulating affect and emotion, processing memory, accessing mental models, and responding behaviorally.<sup>256</sup>

Among the most influential environmental cues that can cause a shift in self-state is the presence of a particular relational object.<sup>257</sup> From the earliest stages of infant development, the relationship between self and object (that is, between a subjective individual and another she is in relationship with) has profound implications for both the

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<sup>252</sup>David Smith and James. K. A. Smith, *Teaching and Christian Practices: Reshaping Faith and Learning* (Grand Rapids: W. B. Eerdmans, 2011), 139.

<sup>253</sup>Hill, *Affect Regulation Theory*, 28. See also, Siegel, "An Interpersonal Neurobiology Approach to Psychotherapy," 186–89.

<sup>254</sup>Siegel, *The Developing Mind*, 186.

<sup>255</sup>Hill, *Affect Regulation Theory*, 29.

<sup>256</sup>Jennifer S. Beer and Kevin N. Ochsner, "Social Cognition: A Multi Level Analysis," *Brain Research*, 1079, no. 1 (March 24, 2006): 98–105; Siegel, *The Developing Mind*, 189.

<sup>257</sup>Siegel, *The Developing Mind*, 213.

brain's neural maturation and resulting sense of self and other.<sup>258</sup> Repeated patterns of relational experience form internal working models (IWM). These relational templates are psychological patterns for how to be in relationships that allow quick responses in social contexts through evaluations and predictions based on past social experiences.<sup>259</sup> One consequence of the evaluative and predictive functions of the IWM is that it acts as a filter through which experience is perceived and absorbed, thus often reinforcing itself. These IWMs are carried from childhood into adulthood with remarkable consistency and effect. Longitudinal studies in attachment have found that the strength of a child's relationship to the mother at age one predicts social competency in elementary school, which predicts quality of friendships at age 16, which predicts the health of romantic relationship in early adulthood.<sup>260</sup> Researchers have also found that secure infant–mother attachment at age one forecasts greater conflict resolution skills in romantic relationships in early adulthood.<sup>261</sup> Early attachment experiences are powerful creators of relational patterns that result in specific self–states that can be activated by corresponding interpersonal cues.

In optimal functioning, self–states are integrated so that they are compatible with one another and so that one can shift from one to another with ease and a sense of coherence.<sup>262</sup> The ability to shift between self–states is a mark of the brain's healthy

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<sup>258</sup>For a more complete explanation of this statement, see the above sections on attachment theory and developmental neuroscience.

<sup>259</sup>Hill, *Affect Regulation Theory*, 89–91.

<sup>260</sup>Jeffrey A. Simpson, W. Andrew Collins, and Jessica E. Salvatore, "The Impact of Early Interpersonal Experience on Adult Romantic Relationship Functioning: Recent Findings from the Minnesota Longitudinal Study of Risk and Adaptation," *Current Directions in Psychological Science* 20, no. 6 (December 1, 2011): 355–59; Simpson et al., "Attachment and the Experience and Expression of Emotions in Romantic Relationships: A Developmental Perspective."

<sup>261</sup>Jessica E. Salvatore et al., "Recovering From Conflict in Romantic Relationships: A Developmental Perspective," *Psychological Science* 22, no. 3 (March 2011): 376–83.

<sup>262</sup>Hill, *Affect Regulation Theory*, 29.



development.<sup>263</sup> A coherent sense of self is the result of one's various self-states sharing both memories and associated regulated affect states. Regulated affective states enable adaptive movement among integrated self-states when one needs to respond to environmental changes with flexibility. Experiences of secure attachment produce an increased window of tolerance for affective experience, which in turn optimizes one's capacity for flexible movement between self-states.<sup>264</sup> When an internal or external threatening cue is encountered and has a dysregulating effect on the affective state, the sense of self becomes disintegrated—experienced as dissociated, uncharacteristic of the “true self,” or split off from one's sense of self.<sup>265</sup>

**Trauma and dysregulated–dissociated self-states.** Trauma occurs when a particular event, series of events, or life condition brings on the simultaneous experiences of threat and overwhelm.<sup>266</sup> Traumas come in many forms, but of particular relevance in affective social neurobiology is complex relational trauma.<sup>267</sup> At this time, no singular terminology or definition has been agreed upon as a standard in the mental health professional community for complex relational trauma, though an increasing number of professionals recognize the existence of a psychopathological phenomenon similar to, yet

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<sup>263</sup>Siegel, *The Developing Mind*, 208.

<sup>264</sup>Hill, *Affect Regulation Theory*, 31.

<sup>265</sup>Hill, 30.

<sup>266</sup>Karen W. Saakvitne et al., *Risking Connection: A Training Curriculum for Working With Survivors of Childhood Abuse* (Lutherville, MD: Sidran, 2000).

<sup>267</sup>Christine A. Courtois, *It's Not You, It's What Happened to You: Complex Trauma and Treatment* (Dublin, OH: Telemachus Press, 2014). Courtois identifies five categories of trauma. The first is impersonal trauma, which includes accidents, natural disasters, and personal misfortunes. The second category includes various forms of interpersonal traumas, such as relational or attachment trauma or institutional trauma. Third, identity traumas are the result of aspects of one's character or personhood, such as discrimination or abuse based on gender, race, or ethnicity. The fourth category is community or group trauma. Finally, the fifth category is complex trauma, in which multiple forms of trauma have converged in an individual's experience.

distinct from PTSD.<sup>268</sup> Suggested nomenclature for this subcategory of psychological trauma includes complex traumatic stress disorder, developmental trauma disorder, betrayal trauma, Type II trauma, and disorders of extreme stress.<sup>269</sup> PTSD is often developed as a result of a single event or isolated cluster of events in a particular period of time, hence the term “shock trauma” is sometimes applied; complex relational trauma is the result of chronic traumatic experiences of abuse or neglect. PTSD does not typically have an intimate relationship as its source, whereas complex relational trauma typically includes close attachment figures as sources of trauma. Whereas treatment for PTSD can be relatively brief, complex relational trauma most often requires long-term therapy. This is likely due to the multilayered traumatic experiences involved in complex trauma.<sup>270</sup>

While shock traumas can more easily be pinpointed—for instance, the sudden death of a loved one or surviving a car accident—complex relational traumas are more difficult to detect. Complex relational trauma occurring during the pivotal developmental points when infants and children are dependent on the co-regulation of secure attachments for neurophysiological formation is often referred to as developmental trauma.<sup>271</sup> When infants and children experience prolonged periods of misattunement or neglect from caregivers, they develop neural structures in which the features of affect dysregulation—fight, flight, and freeze—meant for momentary adaptive protection

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<sup>268</sup>American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders*, 5<sup>th</sup> ed. (Washington, DC: American Psychiatric Publishing, 2013), 271–80. The *DSM 5* outlines a number of trauma-based disorders, but as of now does not contain a specific diagnosis for complex relational trauma.

<sup>269</sup>Heather Davediuk Gingrich, *Restoring the Shattered Self: A Christian Counselor’s Guide to Complex Trauma* (Downers Grove, IL: IVP Academic, 2013), 20.

<sup>270</sup>Davediuk Gingrich, *Restoring the Shattered Self*, 23.

<sup>271</sup>Laurence Heller and Aline LaPierre, *Healing Developmental Trauma: How Early Trauma Affects Self-Regulation, Self-Image, and the Capacity for Relationship* (Berkeley, CA: North Atlantic Books, 2012), 118. For the purposes of this study, I am considering developmental trauma as a form of complex relational trauma.

against trauma, become a maladaptive default state.<sup>272</sup> Caregivers need not be obviously abusive to induce states of trauma in those dependent upon them; they merely need to suffer from dysregulation themselves. Mothers who suffer from affective hyperarousal will overstimulate their children, triggering activation of the sympathetic nervous system: heart rate, blood pressure, and respiration increases, and the developing brain is subjected to an infusion of stress hormones that lead to a hypermetabolic state. Conversely, mothers who live in states of affective hypoarousal—less interactive and responsive to children, emotionally absent or even neglectful<sup>273</sup>—will foster a parallel parasympathetic dominant state in children: heart rate, blood pressure, and respiration decreases, endogenous opiates are released with a numbing effect, and a state of withdrawal or dissociation is experienced.<sup>274</sup> In a very real way, relational trauma and its accompanying affect dysregulation can be handed down from one generation to the next.<sup>275</sup>

When the developing minds of infants or children experience developmental trauma, their neural networks are encoded with maladaptive IWMs of self and other. These result in dysregulated–disintegrated self–states activated in the face of relational triggers for affective dysregulation. The activation of a dissociated–disintegrated self–

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<sup>272</sup>Bruce D. Perry et al., “Childhood Trauma, the Neurobiology of Adaptation, and ‘Use-Dependent’ Development of the Brain: How ‘States’ Become ‘Traits,’” *Infant Mental Health Journal* 16, no. 4 (Winter 1995): 271–91.

<sup>273</sup>Michael D. De Bellis, “Developmental Traumatology: A Contributory Mechanism for Alcohol and Substance Use Disorders,” *Psychoneuroendocrinology* 27, no. 1 (January 1, 2002): 155–70. According to De Bellis, neglect is the most prevalent form of childhood maltreatment.

<sup>274</sup>Schore, “Relational Trauma and the Developing Right Brain,” 61. See also, Solomon and Tatkin, *Love and War in Intimate Relationships*.

<sup>275</sup>Erik Hesse and Mary Main, “Frightened, Threatening, and Dissociative Parental Behavior in Low-Risk Samples: Description, Discussion, and Interpretations,” *Development and Psychopathology* 18, no. 2 (June 2006): 321. By this I am not implying that all affect dysregulation can neatly be traced to one’s parents and grandparents. Primary caregivers are not the only potential source of early developmental trauma. Infants and children can experience forms of shock trauma—for example, experiencing an automobile accident, medical surgeries, sexual or physical abuse, or the sudden departure of a babysitter—which can impact neurobiological development. See Heller and LaPierre, *Healing Developmental Trauma*, 129.

states is automatic and non-conscious, and it has a controlling effect on the whole subjective experience of the individual, including one's attention, perception, mental models, memory, metacognitions.<sup>276</sup> The loss of affective regulation and the resulting disintegration of one's sense of self results in the use of primitive schemas and old relational scripts rather than in-the-moment, present responsiveness. In a very literal way, a dysregulated-dissociated self-state takes one back to an "old self," incompatible with one's present sense of identity and character.

The subjects of Christian spiritual formation are individuals whose development has taken place in a fallen world. Given the extensive effects of sin, we should expect most people to have some degree of deficit in their development. When a professing, practicing Christian suddenly acts in ways completely contrary to Christlikeness and to his own established character, the concept of the embodied mind suggests that this person may be experiencing an echo of earlier relational trauma, taking him back to an older, not-yet-transformed self-state. The subjective experience of a regulated-integrated self-state is that of self-mastery, empathy, contentment, and connection.<sup>277</sup> These traits sound like the virtues Christians are called to cultivate, such as self-control, compassion, peace, and love. In contrast, the subjective experience of dysregulated-disintegrated self-states include a loss of control, acting contrary to one's values, and a sense that something is not right. In this description, one can almost hear Paul's words describing his struggle against the flesh: "For I do not understand my own actions. For I do not do what I want, but I do the very thing I hate" (Rom 7:15).

**Affective social neurobiology and spiritual formation.** Paul concludes his troubled account of his own dissociative behavior with the exclamation, "Wretched man

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<sup>276</sup>Hill, *Affect Regulation Theory*, 37-44.

<sup>277</sup>Hill, *Affect Regulation Theory*, 31.

that I am! Who will deliver me from this body of death? Thanks be to God through Jesus Christ our Lord!” (Rom 7:24–25). Paul proclaims that his hope for overcoming the incongruity between his desired identity and lived experience, indeed, the hope for all who experience this dichotomy, is found in the Lord Jesus Christ. Is this solution for overcoming the effects of the fall, including relational trauma, developmental deficits, and personal sin overly spiritualized and unrealistic?<sup>278</sup> If one leaves it as a bundle of primarily cognitive notions, even if accompanied by a degree of warm nostalgia, then it is hopelessly ethereal. But if held alongside a firm commitment to wholistic dualism and the concept of the embodied mind, then Paul’s gospel solution demonstrates the power of the spiritual to break into human experience to reform the lower realms. Through the natural mechanisms basic to the biology of human beings—including neural networks, limbic structures, and bodily organs—the Spirit of God through the gospel brings about transformations of a divine order. This can be seen through Johnson’s framework of the orders of human nature.

Paul’s answer to his question of who will deliver him from his despairing state is a proclamation of his relationship to God in Christ by the Spirit (Rom 8:1–11). Indwelt by God’s Spirit at a *biophysiological* level, Paul understands the believer to be mystically united to incarnated Christ, his death, and resurrection (Rom 8:11). This union with Christ extends into sharing the position of being a son of God—though by adoption rather than nature—with the privilege of calling upon God as “Abba! Father!” (Rom 8:15). Thus the believer’s primary self-object orientation has shifted, so that she conceptualizes her self as being in Christ and her primary object as God the Father. Armed with a new identity and story to form her *psychosocial* being, the world in which she lives has a new meaning for her; her intrapersonal struggle against the flesh is but one echo of the cosmic

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<sup>278</sup>For a discussion on the relationship between sin and biological factors in human nature, see Matthew S Stanford, *The Biology of Sin: Grace, Hope, and Healing for Those Who Feel Trapped* (Downers Grove, IL: InterVarsity Press, 2010).

trauma brought on by sin (Rom 8:20–23). The believer is not alone in her struggle, and she is assured that it ends in glory (Rom 8:17, 23, 30). Her attachment system has found a new secure base, one who is continually in proximity by his Spirit (Rom 8:27) and who assures her of final security in spite of all hardship (Rom 8:28–30). Indeed, nothing will separate the believer from this new source of love and safety (Rom 8:38–39).

Yet these mental representations will bring about, and in return be reinforced by, embodied enactments. Believing she is indwelt by God’s Spirit, the believer will give her *biophysiological* self, her material body, over to God to experience a transformative renewal of her mind (Rom 12:1–2). This renewal takes place as she finds herself embedded in the body of Christ, with a new *psychosocial* identity emerging from her relationship to Christ and the other members of his body (Rom 12:4–5). This immersion into a whole new network of relationships provides a safe setting for new formative experiences in the body (Rom 16:1–16),<sup>279</sup> especially as members of this network embody as representatives of Christ the secure, love, and nurture found in him as the new primary attachment (Rom 16:13).<sup>280</sup> This change in the spiritual and psychosocial orders bears the fruit of virtue in interpersonal relationships (Rom 12:9–21) and social conduct (Rom 13:1–7), a reformation of the *ethical* order. Through the eschatological power of the Spirit at work through the word and body of Christ, the natural mechanisms for human formation are put to use for a particularly Christian spiritual task, the forming of Christ in the believer (Gal 4:19).

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<sup>279</sup>Brown and Strawn, *The Physical Nature of Christian Life*, 93.

<sup>280</sup>Brown and Strawn, *The Physical Nature of Christian Life*, 114–15.

## CHAPTER 3

### METHODOLOGICAL DESIGN

This chapter details the methods and procedures that were utilized for the qualitative portion of this research study of the phenomenon of student formation at Christian higher education institutions. This study employed as its methodology a grounded qualitative meta-analysis approach as outlined and utilized by Stall-Meadows.<sup>1</sup>

Included below are the research questions, design overview, population, sample, delimitations, limitations of generalization, description of research instrumentation, and an outline of the procedures for completing the study.

#### **Research Questions**

1. What does a meta-analysis of qualitative studies reveal about the phenomenon of student spiritual formation at Christian higher education institutions?
2. How do emerging theories on student spiritual formation reflect the growing body of knowledge about human development from affective social neurobiology?

#### **Design Overview**

This grounded qualitative meta-analysis sought to explore how student spiritual formation is experienced and understood within Christian higher education institutional settings. Through the use of previously conducted qualitative studies, this

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<sup>1</sup> Celia Stall-Meadows, “Grounded Meta-analysis of Qualitative Case Study Dissertations in Distance Education Pedagogy” (Ed.D. diss., Oklahoma State University, 1998); Celia Stall-Meadows and Adrienne Hyle, “Procedural Methodology for a Grounded Meta-Analysis of Qualitative Case Studies,” *International Journal of Consumer Studies* 34, no. 4 (July 1, 2010): 412–18. Stall-Meadows based her methodology on the proposal that of Hossler and Scalese-Love. However, rather than using both qualitative and quantitative studies as they did, Stall-Meadows utilized only qualitative case studies as a data source. See Don Hossler and Patrick Scalese-Love, “Grounded Meta-Analysis: A Guide for Research Synthesis,” *The Review of Higher Education* 13, no. 1 (1989): 1–28.

grounded meta-analysis brought together the collection of data from a variety of sources, including interviews, observations, documents, and artifacts.<sup>2</sup> Research bias—which must always be considered, and especially so in qualitative research<sup>3</sup>—is countered through triangulation, the use of data collected by a number of researchers.<sup>4</sup> This data will undergo a meta-analysis following the protocol of grounded theory.

### **Population**

The theoretical population for this study consisted of students at Christian higher education institutions that seek to actively engage in efforts and initiative for student spiritual formation.

### **Sample**

Non-random sampling was employed to select qualitative studies of institutions within the population that met the necessary criteria for this study as outlined below. Non-random sampling is a standard practice within grounded theory research, which uses theoretical sampling to guide its process.<sup>5</sup>

### **Delimitations**

1. A delimitation of this research is that the units of analysis consisted of Christian higher education institutions that have been the subjects of qualitative studies by research doctoral students.
2. The emerging themes and theories from the grounded analysis were considered in light of possible application of and engagement with affective social neurobiology, rather than cognitive or developmental neuroscience, in Christian higher education contexts.

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<sup>2</sup> John W. Creswell, *Qualitative Inquiry and Research Design: Choosing among Five Approaches*, 3<sup>rd</sup> ed. (Los Angeles: SAGE Publications, 2012), 104–5.

<sup>3</sup> John W. Creswell, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, 4<sup>th</sup> ed. (Los Angeles: SAGE Publications, 2013), 205.

<sup>4</sup> Creswell, *Qualitative Inquiry and Research Design*, 201.

<sup>5</sup> Corbin and Strauss, *Basics of Qualitative Research*, 375.



### **Limitations of Generalizations**

Data from the sample offered limited generalizability, as is the nature of qualitative research.<sup>6</sup> Rather than produce theory that may be generalized to the whole theoretical population, this research provides initial, tentative conclusions about the phenomenon of student spiritual formation at Christian higher education institutions that may then be compared to research results provided by others studying the phenomenon.<sup>7</sup> Other institutions not included in the case study sample may offer different insights into the process of student formation.

### **Data Sources**

The data needed for this grounded qualitative meta-analysis included recent doctoral-level dissertations or theses presenting qualitative studies of spiritual formation of students at Christian institutions of higher education enrolled in on-campus programs. Dissertations and theses were selected based upon the following criteria being met:

1. Written in the English language;
2. Completed in the last two decades;
3. Accessible through ProQuest;
4. Identified online with the key terms that included combinations of “student formation,” “spiritual formation,” “transformational learning,” “higher education,” “case study,” and “Christian;”
5. Containing observational and/or interview data about the experience of student spiritual formation at Christian higher education institutions for the purpose of qualitative analysis;
6. Focused primarily on spiritual formation of students enrolled in a Christian higher education institution on-campus program.

A search via ProQuest utilizing combinations of the key terms “student formation,” “spiritual formation,” “transformational learning,” “higher education,” “case study,” and

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<sup>6</sup>Corbin and Strauss, *Basics of Qualitative Research*, 204.

<sup>7</sup>Stall-Meadows, “Grounded Meta-Analysis,” 49.

“Christian,” yielded a list of thirty–six potential dissertations published in the last twenty years.

### **Data Selection**

Abstracts for the thirty–six potential dissertations were reviewed and evaluated for their potential relevance for inclusion in this meta-analysis by meeting the criteria outlined above. Of the thirty–six potential studies, five met the criteria above and focused on the relevant subject matter (see appendix 1). These studies were evaluated for their quality and fitness by utilizing the Qualitative Study Coding Form (see appendix 2) to ensure the integrity of the meta-analysis.<sup>8</sup> Objective, subjective, and methodological considerations are included in the Qualitative Study Coding Form. This form evaluates objective components in each potential qualitative study: problem statement, research questions, purpose, concepts, data, sources, site, subjects, method, findings, conclusions, and recommendations. The form also considers subjective information, including: quality, reliability, and confidence levels in the information presented in the study. Finally, to ensure the validity of the meta-analysis methodologically, this form also notes an evaluation of the critical concepts of *spiritual formation* and *Christian higher education institution* for homogeneity and congruence with the definitions set out within this study, as well as an appropriate focus on the phenomenon of spiritual formation (as opposed to, for example, a focus on curriculum about the subject of spiritual formation).

These five studies for potential research use were acquired via ProQuest. Based on the information regarding quality and depth of data captured by the Qualitative Study Coding Form’s standardized format, five case studies were determined to be usable (see appendix 3). One of the dissertations evaluated at this stage, the study by Rhodes,

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<sup>8</sup>The Case Study Coding form utilized by this study was developed by Stall-Meadows, “Grounded Meta-Analysis.” She developed this form based on the earlier work of Hossler and Scalese-Love, “Grounded Meta-Analysis.” See Hossler and Scalese-Love, “Grounded Meta-Analysis,” 1–28.

actually included two bounded case studies. Based on the understandings of spiritual formation by the schools being studied, one was determined to be fit for use while the other was not. Thus four qualitative studies have been selected for this grounded qualitative meta-analysis:

1. Nunez, Aaron M. "Students' Spiritual Formation at a Christian University: A Hermeneutic Phenomenological Study." Ph.D. diss., University of Phoenix, 2014.
2. Rhodes, Patricia A. "A Tale of Two Schools: The Spiritual Development of Leaders in Protestant Seminaries." Ph.D. diss., University of San Diego, 2014.
3. Sheard, Reed A. "The Role of Spiritual Formation in the Development of Religious Leaders at George Fox Evangelical Seminary." Ed.D. diss., Seattle University, 2004.
4. Snapp, Catherine Ann. "Spiritual Formation: A Case Study in a Seminary Environment." Ph.D. diss., Baylor University, 2002.

In addition to meeting the standard of quality assessed by the Qualitative Study Coding Form, these studies all utilize understandings of Christian spiritual formation congruent with that espoused in this study. Four qualitative studies has been shown to be an acceptable sample size for qualitative meta-analysis.<sup>9</sup> Another potential question that could arise about the selected studies making up this study's sample involves variation among the methodologies among the studies. However, multiple methodological approaches among primary studies within a qualitative meta-analysis is allowed, and the variations can actually become a source of additional insight in the analysis of the data.<sup>10</sup>

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<sup>9</sup>Some researchers have argued that as few as two studies can be utilized in an effective meta-analysis. See Barbara L. Paterson et al., *Meta-Study of Qualitative Health Research: A Practical Guide to Meta-Analysis and Meta-Synthesis* (Los Angeles: SAGE, 2001). The study by Stall-Meadows serving as the primary methodological model for this study utilized only four case studies. See Stall-Meadows, "Grounded Meta-Analysis."

<sup>10</sup>Ladislav Timulak, "Meta-Analysis of Qualitative Studies: A Tool for Reviewing Qualitative Research Findings in Psychotherapy," *Psychotherapy Research* 19, no. 4/5 (July 2009): 594; Paterson et al., *Meta-Study of Qualitative Health Research*; George W. Noblit and R. Dwight Hare, *Meta-Ethnography: Synthesizing Qualitative Studies* (Los Angeles: SAGE, 1988).

## Data Coding and Analysis

With the procurement of the selected primary studies, data from each were recorded, coded, and analyzed using Strauss and Corbin's approach to grounded theory.<sup>11</sup> The nature of grounded theory research is such that "the [coding] design can't be established ahead of time" because the concepts must emerge from the data analysis.<sup>12</sup> Data were collected and immediately analyzed to then form the basis for the next round of data collection.<sup>13</sup> Data from each dissertation was coded using the standard stages set out by Corbin and Strauss: open, axial, and selective.<sup>14</sup> Following the methodology for grounded meta-analysis, the data from the particular qualitative studies was combined only after open, axial, and selective coding was completed for each individually.<sup>15</sup>

### Open Coding

Open coding is explained by Corbin and Strauss as "breaking data apart and delineating concepts to stand for interpreted meaning of raw data."<sup>16</sup> Each primary study was read in its entirety prior to beginning the open coding process. Open coding involved a line by line recording of data framed as either concepts or process. Concepts refers to the ideas or beliefs of individuals involved in the process of student spiritual formation, including students and educators. Process refers to actions undertaken by these individuals. Each concept or phenomena was labeled for the purpose of later categorization of the data using the method of constant comparative analysis.<sup>17</sup> Finally,

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<sup>11</sup>Corbin and Strauss, *Basics of Qualitative Research*.

<sup>12</sup>Corbin and Strauss, *Basics of Qualitative Research*, 218.

<sup>13</sup>Corbin and Strauss, *Basics of Qualitative Research*, 323.

<sup>14</sup>Corbin and Strauss, *Basics of Qualitative Research*, 372.

<sup>15</sup>Stall-Meadows, "Grounded Meta-analysis," 37.

<sup>16</sup>Corbin and Strauss, *Basics of Qualitative Research*, 239.

<sup>17</sup>Corbin and Strauss, *Basics of Qualitative Research*, 92.

each encoded property was dimensionalized with the notation of frequency, duration, degree, or other applicable conditions arising from the data.<sup>18</sup>

Upon completion of open coding for individual qualitative studies, findings for each were compared to the analysis of the study's author. Wherever contradiction existed between the meta-analyst's findings and those of the dissertation authors, findings were reviewed and revised. Because the dissertation authors were the primary collectors of raw data, their analysis was given priority in resolving discrepancies.<sup>19</sup>

### **Axial Coding**

In this stage of coding, the categories developed during open coding were subjected to examination of specific properties and dimensions.<sup>20</sup> The fractured data from the open coding process was brought back together through the observation of new connections within categories and their subcategories. Corbin recommends that beginning analysts implement the use of "the paradigm," which guides axial coding within a category around conditions, action-interactions, and consequences or outcomes.<sup>21</sup> In addition to using the paradigm, axial coding makes use of another analytic tool prescribed by Corbin, "the conditional matrix." The matrix helps researchers examine the complexity of dynamic interaction of conditions and consequences, considering the numerous realms from which conditions may arise or on which consequences may land.<sup>22</sup> One aspect of the axial coding process included a search for patterns among the data of

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<sup>18</sup>Stall-Meadows and Hyle, "Procedural Methodology for a Grounded Meta-Analysis of Qualitative Case Studies," 11.

<sup>19</sup>Stall-Meadows, "Grounded Meta-Analysis of Qualitative Case Study Dissertations in Distance Education Pedagogy," 40-41.

<sup>20</sup>Kathy Charmaz, *Constructing Grounded Theory*, 2nd ed. (Los Angeles: SAGE Publications, 2014), 146.

<sup>21</sup>Corbin and Strauss, *Basics of Qualitative Research*, 156.

<sup>22</sup>Corbin and Strauss, *Basics of Qualitative Research*, 165.

each dissertation.<sup>23</sup> As categories were connected with one another in various ways, more complex subcategories emerged. When conceptualized through the paradigm model, a “story” takes shape through the various relationships among categories and subcategories.

### **Selective Coding**

After the axial coding stage, data was analyzed in search of “core categories.” The core category, also called the central category, is a concept that has the greatest, widest application to all other categories and variables in the data, giving it the greatest explanatory power.<sup>24</sup> For a category to be considered the core category, it must be abstract enough to be representative of all the research participants and to be useful in scaffolding future research, thereby contributing to the development of a more general theory. The core category becomes the central focus of analysis as concepts are integrated into theories at a higher, more abstract level. All categories and subcategories are systematically compared and connected to the core category in an effort to generate a potential theory or list of theories.<sup>25</sup> In meta-analyses with very limited samples, researchers may choose to identify several potential core categories rather than suggest one around which an entire theory is to be built.

Because this study was a grounded qualitative meta-analysis rather than a pure grounded theory study, some additional methodological guidelines applied in selective coding.<sup>26</sup> The methodology developed by Stall-Meadows for grounded meta-analysis requires five steps.<sup>27</sup> The first step, explicating the story line, involves writing a short

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<sup>23</sup>Stall-Meadows, “Grounded Meta-analysis,” 43.

<sup>24</sup>Corbin and Strauss, *Basics of Qualitative Research*, 189.

<sup>25</sup>Corbin and Strauss, *Basics of Qualitative Research*, 196.

<sup>26</sup>Stall-Meadows and Hyle, “Procedural Methodology,” 13.

<sup>27</sup>Stall-Meadows, “Grounded Meta-analysis,” 44.

description of the data's story, using the core category to organize all other categories. Second, the paradigm model is again employed, now at this higher level, to relate the subcategories to the core category. Third, hypotheses are written to piece together the paradigmatic relationships among subcategories, categories, and the core category in a logical, sequential order. In the fourth step, the hypotheses generated in the selective coding, grouped around the story of the core concept, are refined and presented in a less technical, more narrative form. Finally, the last step involves developing multiple hypotheses at the dimensional level to explain the relationships among categories for each case study being examined. Only those appearing in more than half of the case studies should be extracted for further analysis.<sup>28</sup>

### **Data Analysis**

Grounded theory research requires a method of constant comparative analysis, by which data are compared to one another in a way that drives the inquiry.<sup>29</sup> This means the processes of coding and analysis happened in parallel, with each informing the other. The analytic goal in the coding of data was to find patterns, themes, explanations, and understandings relevant to the research questions. To assist in this process, codes underwent computerized analysis via Dedoose, a web-based program for qualitative and mixed methods research developed by professors at UCLA.<sup>30</sup> Qualitative data analysis (QDA) is now regularly done with the aid of computer programs, especially in providing a number of ways to accurately conceptualize the data in visual representations. These programs also provide a record of the researcher's analytic process and capture the data

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<sup>28</sup>Stall-Meadows and Hyle, "Procedural Methodology for a Grounded Meta-analysis of Qualitative Case Studies," 13–14.

<sup>29</sup>Corbin and Strauss, *Basics of Qualitative Research*, 85.

<sup>30</sup>Learn more about Dedoose at <http://www.dedoose.com>. In preparation for my use of Dedoose for this study, I completed a live instructional webinar with a Dedoose support team member and made frequent use of the program's Resource Section on the Dedoose website.

in a way that the researcher or others can audit the process and the raw data in the future.<sup>31</sup>

### **Evaluation and Conclusions**

The product of this grounded qualitative meta-analysis was a list of emerging hypotheses about student spiritual development at Christian institutions of higher education. In the final chapter, the emerging theories are taken up into Johnson's process for transdisciplinary textual translation, outlined in chapter 1, so that they are read in light of the research from affective social neurobiology explicated in the literature review. Based on this transdisciplinary reading, these hypotheses will be evaluated and potential implications and applications of the research findings will be explored.

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<sup>31</sup>Corbin and Strauss, *Basics of Qualitative Research*, 204.



## CHAPTER 4

### ANALYSIS OF FINDINGS

The procedure for analysis will continue to follow the methodology of Stall-Meadows for grounded qualitative meta-analysis.<sup>1</sup> The first step in analysis involved a reading of each primary study, followed by evaluation via the Qualitative Study Coding Form (Appendix 2). Studies judged to be fit for the study were selected. At this point, each primary study underwent open, axial, and selective coding independently of one another. Only after the coding process was completed within each primary study were findings brought together for coding at the level of meta-analysis.

#### **Research Question 1**

What does a meta-analysis of qualitative studies reveal about the phenomenon of student spiritual formation at Christian higher education institutions?

Commonalities in concepts and themes regarding the phenomenon of student spiritual formation at Christian higher education institutions were explored to develop hypotheses originating from the data. This section begins with a summary of the coding process and emerging categories and themes from each of the four primary qualitative studies, presented in the order in which this researcher coded and analyzed them. The final portion of this section offers the meta-analysis of data.

#### **Rhodes Dissertation**

This dissertation utilized a case study methodology which collected data through the examination of artifacts; interviews with students, alumni, faculty, and

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<sup>1</sup>Celia Stall-Meadows, “Grounded Meta-analysis of Qualitative Case Study Dissertations in Distance Education Pedagogy” (Ed.D. diss., Oklahoma State University, 1998).

administrators; focus groups; and the researcher's use of self.<sup>2</sup> The case study examined the spiritual formation components in both the curriculum and in extra-curricular mediums at Fuller Theological Seminary's School of Theology.

**Open coding summary.** Though the institution has always stated that the spiritual formation of its students is a priority, the institution has struggled throughout its history to realize this goal. Reasons supplied for this struggle include the rapid growth and large size of the school, the diverse background of students and faculty, the prioritization of scholarship, turnovers in leadership, and a disconnection of formation efforts from the classroom experience. Alumni largely looked back on their time at the institution with an appreciation for the academic but disappointment in the formative. The culture of the institution promoted a sense of busyness and overload for both faculty and students, making time a precious, rare commodity. This left both faculty and students lacking time and energy for formation efforts. Another obstacle was the apparent lack of understanding about spiritual formation on the part of professors, who, when asked to integrate spiritual formation into their courses, often responded with resistance.

The case study did not find the institution entirely lacking in spiritual formation for students, however. Alumni recalled formative experiences, both with other students and with faculty and administrators. Recollections of these shared experiences frequently began by noting an environment, whether inside or outside of class, in which individuals were accepted and valued. This was especially important given the theological diversity of the student body. Another common element in the reporting of formative experiences is humility on the part of a faculty member. Those classes that stood out as spiritually formative had a focus on praxis, required theological reflection, integrated Christian practices, challenged students' assumptions, and involved the faculty

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<sup>2</sup>Patricia A. Rhodes, "A Tale of Two Schools: The Spiritual Development of Leaders in Protestant Seminaries" (Ph.D. diss, University of San Diego, 2014) 50–52.

sharing his or her passion for the subject matter. Relationships provided a context for formation when they involved socializing, a sense of safety, shepherding, and regular reflection.

The initial coding process yielded 140 codes (see Appendix 4).<sup>3</sup> Using the constant comparative method of qualitative data analysis, these were related, merged, and finally organized under five categories: building relationships, teaching for transformation, creating psychological safety, mandating spiritual formation, failing institutional efforts.

**Axial coding summary.** The codes created and categorized during open coding were dimensionalized and further developed utilizing “the paradigm” and “the matrix” in the axial coding process yielding the following results: Though the institution desired for spiritual formation to be a priority in its program, these efforts largely failed due to the large size and rapid growth of the institution; efforts being based on individual personalities rather than the whole institution; the lack of a coherent approach; and a lack of intentionality, time, and energy. These all created an environment in which departments held conflicting priorities and most professors were simply “checking the box” when it came to integrating formation into their work. Nevertheless, the institution attempted to mandate spiritual formation by adopting accreditation standards, requiring chapel attendance, attempting to integrate formation through its curriculum, requiring weekly formation groups, communicating a vision for spiritual formation, and assessing outcomes.

Even though both disappointment with the institution’s formation process was expressed by both students/alumni and faculty/administration, experiences of student

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<sup>3</sup>It should be noted that this number of codes generated in open coding is significantly higher than the number generated in the open coding of the other primary studies. This is due to my own growth in the process of qualitative data analysis.

spiritual formation were experienced and described by participants. Students found great meaning in the atmosphere that some faculty and fellow students helped to create, one in which they experienced acceptance and being valued, often initiated by a faculty member's demonstration of humility. This created a sense of safety in which students were then free to authentically reflect on theology and allow their own assumptions to be challenged. As faculty fostered this atmosphere of safety and openness and paired it with their own passion, transformational teaching would take place. This teaching had a focus on praxis and was integrated with developing Christian practices. Students also experienced spiritual formation in the relational context of their time at the institution, not only in the formal weekly reflection groups, but also in informal social settings. Many students also recounted meaningful experiences of being shepherded by faculty, who acted as mentors and models.

**Selective coding summary.** The main story dealt with how participants experienced spiritual formation as master-level students at a seminary theological school (see Figure 5). The possibility for formation begins with faculty creating psychological safety for students by accepting individuals, demonstrating humility, and valuing individuals. This sense of safety makes transformational teaching possible, opening students' willingness to deeply reflect on theology and allow their assumptions to be challenged. As faculty sustain this atmosphere of simultaneous safety and challenge, they share their own passion, focus on praxis, and integrate Christian practices into the course. Out of this atmosphere relationships are built and socializing is likely to take place, both between students and faculty and among the students. Faculty further the experience of spiritual formation as they shepherd students, and students reinforce spiritual formation in their voluntary small groups.

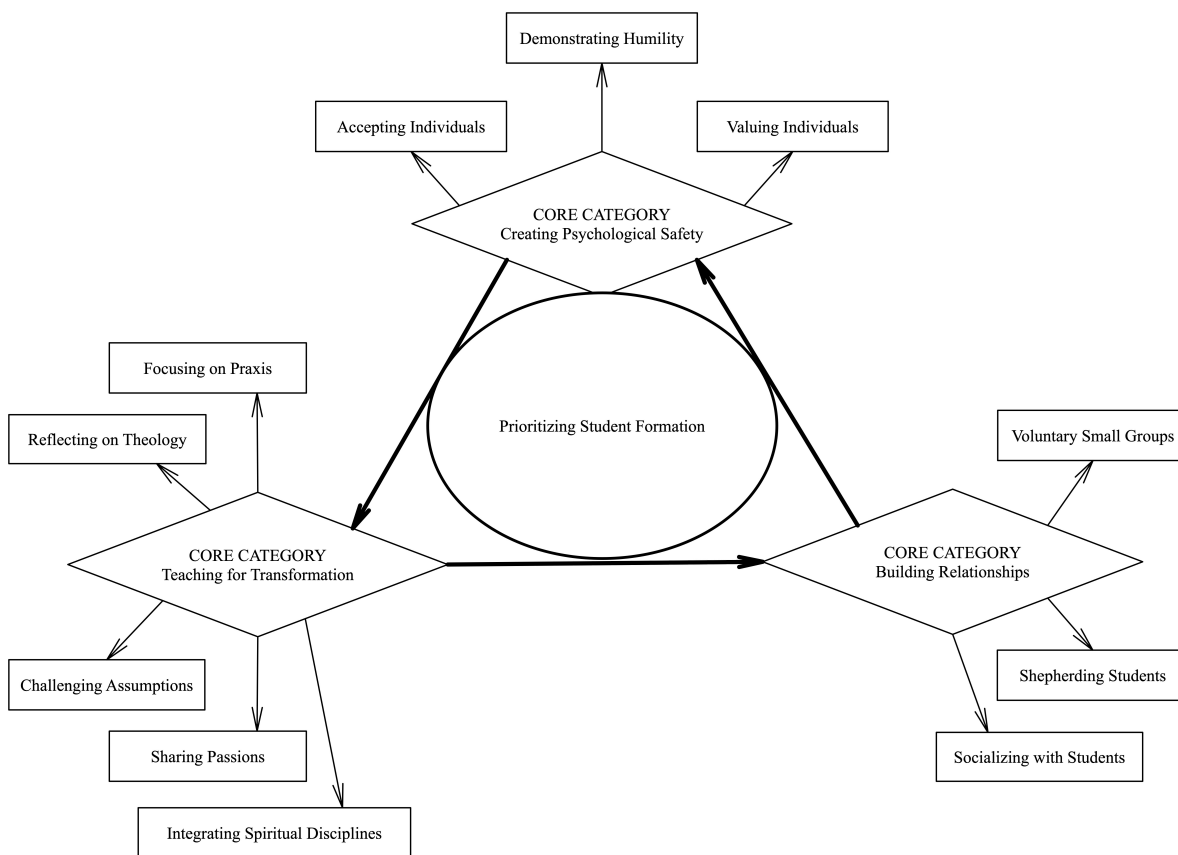


Figure 5. Selective coding summary of Rhodes dissertation

### Snapp Dissertation

Snapp conducted a case study of participants in a doctor of ministry program at Truett Seminary of Baylor University.<sup>4</sup> The sample included 10 students who were all in one cohort, and data was collected through artifacts, interviews, and observation over a two year period.

**Open coding summary.** Many of the students began the program with frustration and resistance toward the program’s required spiritual formation component.

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<sup>4</sup>Catherine Ann Snapp, “Spiritual Formation: A Case Study in a Seminary Environment” (Ph.D. diss., Baylor University, 2002), 54–59.

The resistance for some was rooted in their own experience coming out of Mexico and Central America where they report having suffered at the hands of the Catholic Church. The notion of spiritual formation and the language used reminded them of Catholicism; for other students, it simply sounded “not Baptist,” and they feared the theological influences and an overemphasis on inwardness. Many students reported feeling disrespected, judged, and overwhelmed by the spiritual formation process, citing a disconnect between the spiritual formation director and their own experience and comfort zones. With time some students, not all, began to open themselves to the formation process, which included Christian practices such as reading Scripture, prayer, meditation on Scripture, journaling, service, and silence. In addition to these practices, the formation process included participation in small groups. The formation program had an emphasis on the implicit with the explicit: “being versus doing,” or “experiencing versus learning.” Those students who did become open to the spiritual formation component of their program came to experience acceptance, connection, value, and safety with the other students and their formation leaders. These same students reported becoming more authentic with God, others, and themselves.

The open coding process yielded 52 codes (see appendix 5). Using the constant comparative method of qualitative data analysis, these were related, merged, and finally organized under four categories: experiencing psychological safety, experiencing transformation, participating in formation component, and inhibiting transformation.

**Axial coding summary.** The codes created and categorized during open coding were dimensionalized and further developed utilizing “the paradigm” and “the matrix” in the axial coding process, yielding the following results: Most students began this program with skepticism about and resistance to the spiritual formation component. Initially the student’s experience of spiritual formation was inhibited by their own fear of the unknown, of unsound theological influences, and an overemphasis on the “inward.”

Many felt disrespected and judged by the leaders, and some were simply overwhelmed by the newness of the concepts. Eventually, the leadership seemed to adjust the language and was better able to conceptually meet students closer to their own traditions and comfort levels. Many students reported feeling more comfortable (safe) with the process when leaders helped them see the basis in Scripture, allowing them to trust God's leadership through the Bible. The cultivation of Christian practices took place in small groups with an emphasis on being and experiencing over doing and learning.

Students who reported having experienced spiritual formation indicated they were more authentic with God, having an increased sense of his presence and alignment to his will. They also reported greater authenticity to others, allowing themselves to participate in “psychological dumping” and finding accountability and decreased temptation. Lastly, they reported greater authenticity with themselves, having learned better self-care, discipline, and having a refined sense of self in relationship to God. Students who experienced transformation were those who came to have a sense of psychological safety: a feeling of acceptance, connection, value, and security. Those who did not gain this sense of safety remained resistant to the formation component throughout the program.

**Selective coding summary.** The main story dealt with how participants experienced spiritual formation as professional doctoral students at a seminary (see Figure 6). Students arrived largely ignorant of spiritual formation as a concept and spiritual disciplines as practices. Their initial fear of the unknown, as well as feeling judged and disrespected by leaders, led to a feeling of overwhelm and the inhibition of the spiritual formation process. However, when the leadership adjusted and helped to create a sense of psychological safety for the students, they became open to the spiritual formation component. They engaged Christian practices and participated in regular small groups, focusing on experiential learning. This resulted in the experience of spiritual

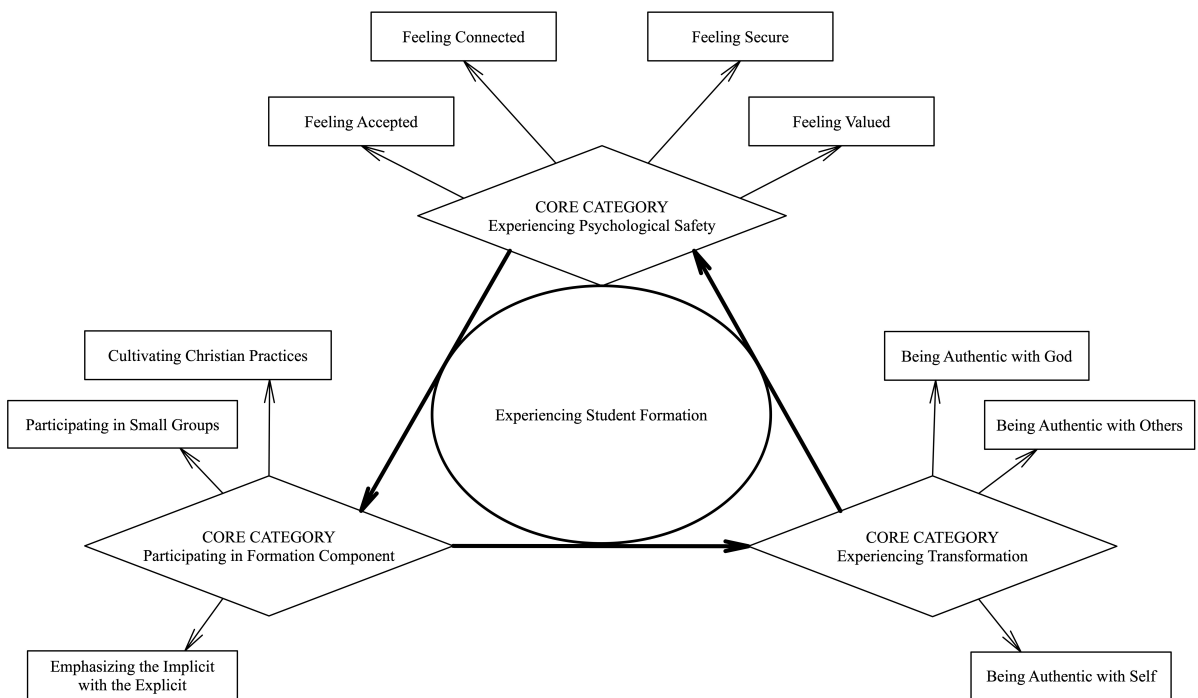


Figure 6. Selective coding summary of Snapp dissertation

transformation, which students reported as becoming more authentic with God, others, and themselves.

### Nunez Dissertation

This dissertation was based upon interviews exploring the lived experience of 25 full-time students attending Arizona Christian University.<sup>5</sup> Transcripts of these interviews were analyzed using a qualitative phenomenological framework. Findings were reported in chapter 4 of the dissertation, which was analyzed for this study.

**Open coding summary.** Despite the institution's stated desire that students undergo spiritual formation while enrolled in degree programs, students lacked clarity on

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<sup>5</sup>Aaron M. Nunez, "Students' Spiritual Formation at a Christian University: A Hermeneutic Phenomenological Study" (Ph.D., University of Phoenix, 2014), 100.



the process and nature of spiritual formation. Students focused heavily on behavioral markers for assessing and measuring formation, emphasizing the need for application over mere cognitive knowledge. Students reported that relationships were essential to the formation process, noting that these could involve faculty or other adults, as well as other students. Relationships that were helpful in formation were marked by feelings of acceptance, being valued, support, safety, and connection. Relationships that were not helpful were those that lacked a sense of authenticity and remained on the surface. Mentorship, whether between a student and adult or between students, was cited as important in the formation process, with effective mentors being accessible, sharing from their own experience, and providing accountability. Students noted the potential for growth through trials and challenges, and they also noted the potential challenge to spiritual formation arising from inhabiting the “Christian bubble” of the institution.

The initial open coding process yielded 52 codes (see Appendix 6). Using the constant comparative method of qualitative data analysis, these were related, merged, and finally organized under four categories: building relationships; experiencing psychological safety; experiencing transformation through application; and evidencing transformation through application.

**Axial coding summary.** The codes created and categorized during open coding were dimensionalized and further developed utilizing “the paradigm” and “the matrix” in the axial coding process, yielding the following results: While living in a “Christian bubble,” students simultaneously experience both the support of the institution’s culture and the many resources it offers, as well as the potential for insulation from the “real world” and an artificial spiritual confidence. Student’s experience of spiritual formation or transformation was centered around the concept of application, with an emphasis on application as both the means and consequence of formation. Application as a means involves moving beyond head knowledge to heart knowledge, imitating others

who follow Christ, living a life congruent with one’s faith through explicit motives, going through trials, and experiencing transformational learning that results in a changed perspective or paradigm. Application as a consequence includes living a life congruent with one’s faith through implicit motives and going on affect change in others’ lives. The context for formation is relationships, which include being mentored and helping others grow spiritually. The entire process is predicated upon the student’s felt sense of psychological safety: feeling accepted, connected, safe, supported, and valued.

**Selective coding summary.** The main story dealt with how participants experienced spiritual formation as full-time, on-campus students at a Christian university (see Figure 7). For participants in this study, the most important concept in their

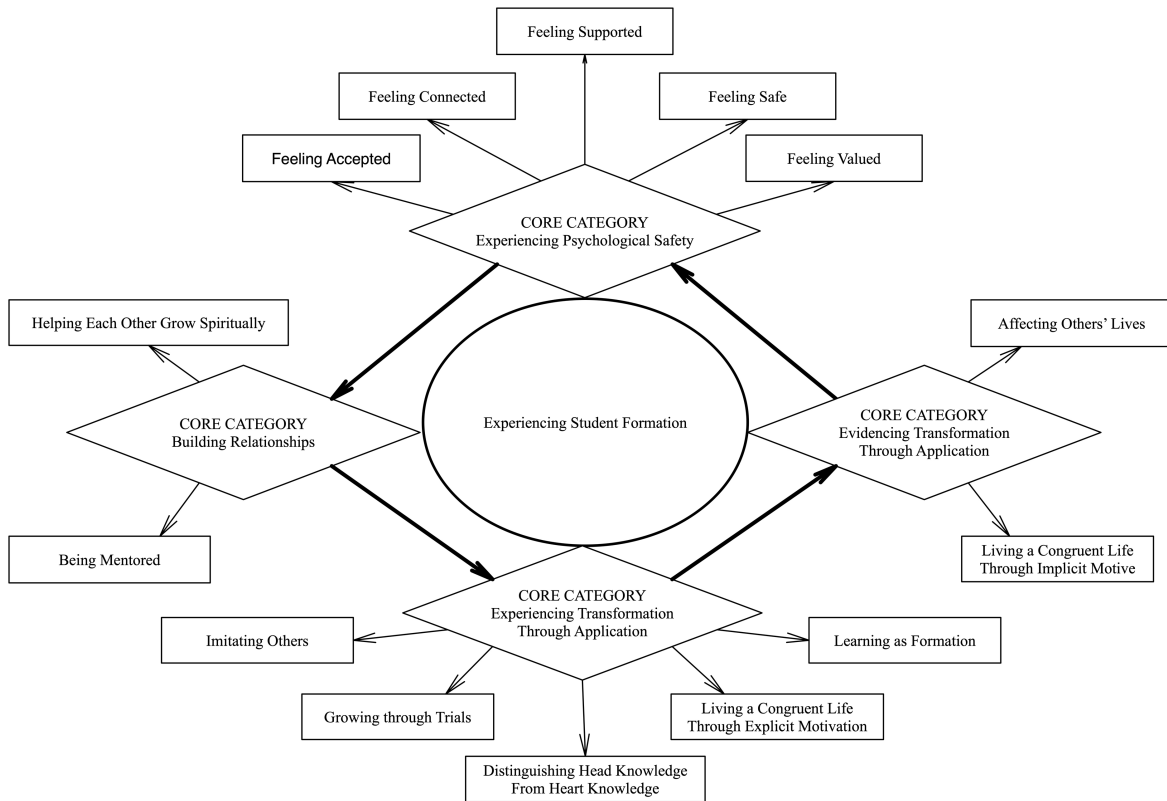


Figure 7. Selective coding summary of Nunez dissertation

experience of formation is accountability. A sense of psychological safety is an experiential prerequisite for formation to take place: feeling accepted, connected, supported, safe, and valued. This sense of safety allowed for students to build meaningful relationships, both with mentors and peers. Students experienced transformation in the context of these relationships as realms to work out application of their faith. This took place through imitating others, growing in trials, distinguishing head knowledge from heart knowledge, living a congruent life through explicit motivation, and learning as formation. Students understood that transformation had actually taken place when application of their faith was an implicit motivation for living a congruent life. In other words, they believed the intentional effort to live a congruent life in relationship with God and others was the means of transformation, while the more automatic, implicit motivation to live a congruent life in relationship with God and others was the fruit of transformation. Another evidence of transformation is affecting the lives of others by leading them in spiritual formation.

### **Sheard Dissertation**

Sheard examined student experiences of spiritual formation within the master of divinity program at George Fox Evangelical Seminary. He utilized interviews with ten alumni who had been full-time students in the master of divinity program.<sup>6</sup> His findings were reported in chapter 4, which was coded and analyzed for this study.

**Open coding summary.** Though many participants reported having little to no exposure to spiritual formation as a concept or formal practice prior to their time in their degree program, they all felt they had benefitted from the spiritual formation component at their institution of study. In the course of the program, they cultivated Christian

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<sup>6</sup>Reed A. Sheard, "The Role of Spiritual Formation in the Development of Religious Leaders at George Fox Evangelical Seminary" (Ed.D. diss., Seattle University, 2004), 91–92.

practices, including meditation on Scripture, reading Scripture, and praying, and participated in groups and classes about formation. Students were from diverse backgrounds and faith traditions, and many came to see spiritual formation as missing from their local church experience. Students experienced the professors of their spiritual formation classes differently than they did faculty of other areas, such as biblical languages or theology. The formation faculty made themselves more vulnerable to students, shared from their own experience, and were generally seen as more authentic. Students felt safe, confident, and accepted in their classes. They learned new perspectives from each other, experienced emotional transformation, and improved in their relational interactions. Students also reported feeling more connected to God, others, and to Christian history and tradition as a result of their participation.

The students indicated that the formation classes focused on heart knowledge in addition to head knowledge through the process of theological reflection. Some seemed to see these courses as “all about application.” As a result, students reported having prioritized their relationship with God, finding peace, feeling grounded and centered, and increasing in self-awareness. The formation experience led to a reorientation of their image of self-before-God, allowing them to both serve and lead others more effectively and practice more effective self-care. As a result of the spiritual formation component, participants believed they were better equipped to lead others in formation and help them to grow spiritually as they were used by God as conduits of the Spirit.

The open coding process yielded a total of 47 codes (see Appendix 7). Using the constant comparative method of qualitative data analysis, these were related, merged, and finally organized under five categories: experiencing psychological safety; leading others in transformation; connecting; experiencing transformation; and evidencing transformation.

**Axial coding summary.** The codes created and categorized during open coding were dimensionalized and further developed utilizing “the paradigm” and “the matrix” in the axial coding process, yielding the following results: For participants in the spiritual formation component of this master of divinity program, feeling accepted by both the faculty and the diverse student body also allowed them to feel confident in the process. The faculty assisted by helping to language the process of spiritual formation to students unfamiliar with relevant concepts and practices. Faculty also encouraged students in their own practices and were willing to pass on their own experience and practices to them. Students saw these professors as relatable, being authentic and vulnerable, and as conduits for the work of the Holy Spirit.

The experience of transformation reported by students included reflecting on theology and focusing on application. In reflection on theology, students were led to recognize heart knowledge in addition to mere head knowledge; they were led to a place of knowing by experience rather than merely proposition. In focusing on application, students were introduced to Christian practices and reminded of the calling to be imitators of Christ. The evidence of transformation included a reorientation of self—before—God, increased self—awareness, emotional transformation—including changed attitudes, increased patience, feeling confident, feeling grounded and centered, and finding peace—and improved relationship. These relational improvements included relational interactions and ministry leadership. Students also reported feeling greater connectedness to God, others, and themselves.

**Selective coding summary.** The main story dealt with how participants experienced spiritual formation as full—time students master of divinity students at a Christian higher education institution (See Figure 8). Students largely came to the program with a lack of experience with spiritual formation as a concept and practice. Despite the unknown nature of spiritual formation practices, faculty worked to foster a

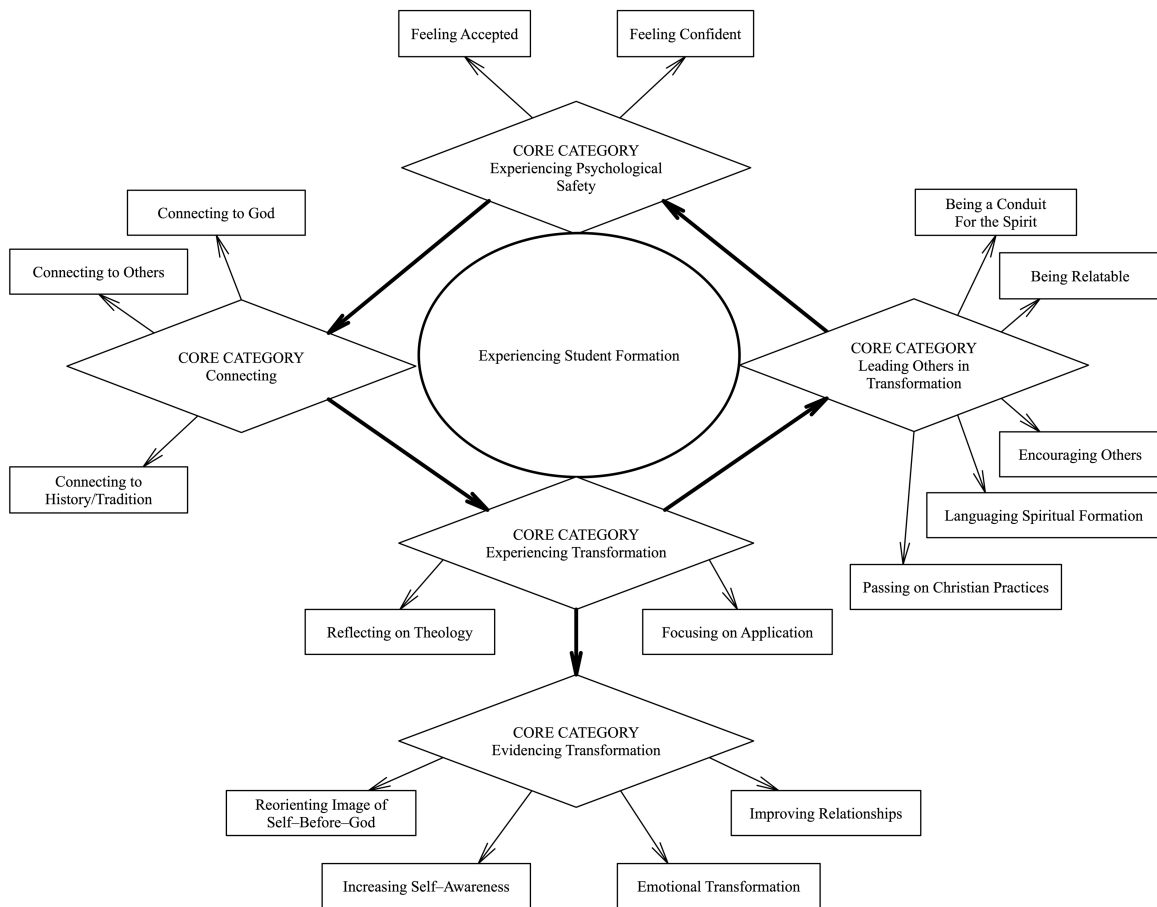


Figure 8. Selective coding summary of Sheard dissertation

sense of psychological safety with students by languaging concepts in an understandable way, sharing from their own experiences with the disciplines, being relatable, and encouraging students. Students came to see faculty as a conduit of the Spirit, being used by God, and they felt accepted and confident in the formation process. Feeling safe, the students were directed to focus on connecting with God as they connected with others in group setting and themselves in individual disciplines. In this context of connection, students experienced transformation through theological reflection and a focus on application. The evidence of this transformation included a reorientation of self-before-God, increasing self-awareness, emotional transformation, and improving relationships.

Finally, those who experienced this transformation were better equipped to lead others in transformation, as their professors had them.

### **Integrated Analysis**

Having coded and analyzed the primary studies to develop general categories and hypotheses, the data was then broken down by categories, concepts, and phenomena in preparation for integration across cases, simplifying the complex procedure of meta-analysis (see appendix 8).<sup>7</sup> Once the data from the four primary studies was consolidated, the constant comparative method of qualitative data analysis was used to further develop the meta-analysis of the studies by reading each study in light of the categories, concepts, and phenomena found in the others. The following three categories were shared across at least 51 percent of the dissertation: establishing psychological safety, facilitating formation, and experiencing transformation. These three emerging categories were further developed based on recurring concepts, phenomena, and relationships found in at least three of the four primary studies. These results can be seen in table 1 below.

The relationships of these four emerging categories were then systematically examined to formulate hypotheses that have been systematically derived from the data.<sup>8</sup> Following the pattern suggested by Strauss and Corbin, the hypotheses were articulated according to the following format: “Under these conditions, when one takes this action, this is the result.”<sup>9</sup> These emerging hypotheses will be initially presented in this section with supporting data from the primary studies and research literature. Further exposition of these hypotheses, particularly in their relationship to

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<sup>7</sup>Stall-Meadows, “Grounded Meta-Analysis,” 62.

<sup>8</sup>Juliet Corbin and Anselm Strauss, *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*, 4th ed. (Los Angeles: SAGE Publications, Inc, 2014), 375.

<sup>9</sup>Corbin and Strauss, *Basics of Qualitative Research*, 153; Stall-Meadows, “Grounded Meta-Analysis,” 63.

affective social neurobiology, will be provided in the next section.

Table 1. Category development in the grounded qualitative meta-analysis

Categories, Concepts, and Phenomena	Rhodes	Snapp	Nunez	Sheard
Establishing Psychological Safety	•	•	•	•
Accepting / Feeling Accepted	•	•	•	•
Valuing / Feeling Valued	•	•	•	
Supporting / Feeling Supported		•	•	•
Facilitating Formation	•	•	•	•
Attending to the Implicit	•	•	•	•
Focusing on Praxis	•	•	•	•
Focusing on Experiencing		•	•	•
Modelling Transformation	•		•	•
Challenging Implicit Assumptions, Perspective, and Paradigms	•	•	•	•
Reflecting on Theology	•	•		•
Integrating Christian Practices	•	•	•	•
Reading Scripture	•	•	•	•
Praying	•	•	•	•
Experiencing Transformation	•	•	•	•
Reorienting of Self-and-God	•	•	•	•
Connecting with God Authentically	•	•	•	•
Connecting with Self Authentically	•	•		•
Reorienting of Self-and-Other	•	•	•	•
Connecting with Others Authentically	•	•	•	•

### Hypothesis 1

*Under conditions in which students may encounter new and challenging ideas and experiences, when facilitators communicate acceptance, value, and support to students, a sense of psychological safety is established.*

The importance of psychological safety was the most demonstrable theme



evidenced across the primary studies. In the Rhodes dissertation, students shared about the importance of feeling accepted in the theologically diverse body that made up the school:

The teachers gave that sense of value to each student. If you raised your hand and asked something unusual, they would say, that's an interesting point of view, never putting you down, and keeping that mindset—that permeated the classroom so that students had respect for one another. It's really critical to grow spiritually ...there's lots going on inside every human being and that was um, key I felt to making growth more possible, for a healthy environment.<sup>10</sup>

Snapp's study also contained several quotes from students on the importance of feeling accepted and the detrimental effects of feeling judged. One student who struggled connecting with and practicing the spiritual formation disciplines in his program stated:

The tone I hear is that we have all been wrongly taught and are spiritual midgets as a result. So all of a sudden, I was carrying all of these things out to a logical conclusion. If I'm not sitting right, or holding my hands right, or breathing right, does that mean I'm not as spiritual as you are?<sup>11</sup>

Another participant who initially struggled with the spiritual formation component reported how cultivating a sense of safety allowed him to open up to the process and be more authentic in his participation:

What we did in our small groups, though, was to have the opportunity to say, "How are you doing? What are you feeling?" So I was able to do that in small groups without any fear. It was a very natural, normal conversation to be able to say, "That wasn't for me. I had a very difficult time doing that, it's not connecting for me." And what I found was that that was okay.<sup>12</sup>

The Nunez study also highlighted the importance of feeling valued, accepted, and supported. One student described the context of spiritual formation as, "Open community: loving each other and speaking to each other about God and helping each other. That just causes everyone to feel comfortable and grow spiritually."<sup>13</sup>

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<sup>10</sup>Rhodes, "A Tale of Two Schools," 148.

<sup>11</sup>Snapp, "Spiritual Formation," 99.

<sup>12</sup>Snapp, "Spiritual Formation," 131–32.

<sup>13</sup>Nunez, "Students' Spiritual Formation at a Christian University," 129.

Sheard's study stressed the importance of psychological safety, as well. One particularly salient quotation from a participant highlights how faculty members, as facilitators of spiritual formation, could create psychological safety through their own humility and vulnerability:

I would often hear stories—not only his strengths, but also about areas where he felt weak in his own Spiritual Formation, or areas he was aware of because he knew if he didn't attend to those things that he would stop being effective in ministry . . . I think it was helpful to use personal stories... it provided a place for people to share those experiences.<sup>14</sup>

Psychological safety was a contextual prerequisite to students engaging in the spiritual formation components of their experiences at Christian higher education institutions. Without a sense of this safety, students were resistant or even resentful of such efforts on the part of faculty and school administration. A summarizing quote from Snapp seems applicable to the experience of student spiritual formation found in all four of the primary studies:

Dave's formation experience demonstrates the importance of having an environment of trust and safety within the relational context of the Spiritual Formation program. Those students who reported experiencing openness, validation, compassion and respect in the relationships forged within the small formation groups and with their leaders eventually opened to the process of Spiritual Formation and encountered powerful transformations in their relationships to God, themselves and each other. Those students who did not feel trusted and respected within their small groups reported feeling less inclined to participate in not only the small group activities, but also the individual formation requirements as well.<sup>15</sup>

This emerging hypothesis is consistent with the research literature that finds psychological safety is a necessary contextual element for meaningful transformative learning.<sup>16</sup> A sense of psychological safety gives students the comfort and confidence

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<sup>14</sup>Sheard, "The Role of Spiritual Formation," 106.

<sup>15</sup>Snapp, "Spiritual Formation," 138.

<sup>16</sup>Lesley J. Gill, Philip L. Ramsey, and Sarah I. Leberman, "From Chaos to Safe Transformation: The Emotional Intelligence Learning Environment Model," *Journal of Organisational Transformation & Social Change* 12, no. 3 (September 2, 2015): 257–86; Jean-François Harvey et al., "From Orientation to Behavior: The Interplay between Learning Orientation, Open-Mindedness, and Psychological Safety in Team Learning," *Human Relations* (January 8, 2019) <http://doi.org/10.1177/0018726718817812>.

required to risk opening themselves to challenges to their fundamental assumptions, beliefs, and sense of identity, an openness necessary for meaningful change to occur.

## **Hypothesis 2**

*Under conditions in which students sense psychological safety, when facilitators lead students to reflect on theology, students experience a challenge to their implicit assumptions, perspectives, and paradigms.*

Theological reflection appeared in three of the four dissertations (the Nunez study being the one exception) as a critical component of student spiritual formation. When students who sensed psychological safety participated in theological reflection, they found themselves facing challenges to their existing assumptions, perspectives, and paradigms. I describe these as “implicit” because the nature of most assumptions, perspectives, and paradigms is just that—operating at a largely non-conscious level. All four primary students reported that the experience of having such implicit assumptions, perspectives, and paradigms challenged was a component in student spiritual formation.

Rhodes records one participant recalling, “Reflecting just how my own daily life is reflected in my theology, how what I believe reflects in what I do and how I act, I have Fuller to thank for that.”<sup>17</sup> One participant in Snapp’s study also spoke emphatically about the importance of theological reflection in his program:

Having [spiritual formation] here, as far as part of the program, has really put a face to theology and that face is Christ. And so I can’t see how you can not have Spiritual Formation in anything that has to do with ministry, especially the Doctor of Ministry part. I think why didn’t we think of this sooner? I just think to imagine to have this program without the Spiritual Formation and spiritual discipline how different it would be, and how dispassionate it would have been.<sup>18</sup>

One student in the Nunez dissertation articulated the changes in implicit processes when he discussed the difference between conscious, cognitive knowledge and implicit,

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<sup>17</sup>Rhodes, “A Tale of Two Schools,” 149.

<sup>18</sup>Snapp, “Spiritual Formation,” 153.

procedural knowledge:

You just have knowledge of [theology]. Honestly, I think that's part of it, I think as you- this is probably being way too spiritual- but I think as you understand it, and as you know it, it changes things inside of you and how you think.<sup>19</sup>

Sheard noted that the process of theological reflection did not result so much in theological shifts for students, but in changes to their experiential knowledge and conceptualization of God:

Despite many of the responses given to other questions indicating that there have been changes in viewpoints, the graduates seemed unwilling to admit to changes in their theology. Some participants admitted to a closer, more personal relationship with God, and others claimed there was no difference in the relationship. Terms used by the participants to describe a change in their views of God focused on the idea of having a closer relationship with him; and that God was personalized, softer, loving, and relational.<sup>20</sup>

Critical reflection is an important component in uncovering one's implicit, non-conscious incongruent mental schema, and psychological safety is contextually necessary for such reflection to occur. Cranton and Wright, studying adult literacy educators, found that critical reflection takes place in "gentle" environments of listening and relating, not in environments of criticism and judgment.<sup>21</sup> In the domain of organizational psychology, psychological safety was found to be a critical factor in whether or not workers were willing to reflect on workplace errors.<sup>22</sup>

### **Hypothesis 3**

*Under conditions in which students' implicit assumptions, perspectives, and paradigms are challenged, when facilitators create a safe context for students to reflect on these challenges, students experience increased explicit self-awareness of previously*

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<sup>19</sup>Nunez, "Students' Spiritual Formation at a Christian University," 152.

<sup>20</sup>Sheard, "The Role of Spiritual Formation," 112.

<sup>21</sup>Patricia Cranton and Brenda Wright, "The Transformative Educator as Learning Companion," *Journal of Transformative Education* 6, no. 1 (January 1, 2008): 33-47.

<sup>22</sup>Stefanie Hetzner et al., "Error Orientation and Reflection at Work," *Vocations and Learning* 4, no. 1 (April 1, 2011): 25-39.

*implicit incongruencies with their faith.*

Rhodes offers a rather moving example of this sort of implicit–becomes–explicit shift in a quotation by an alumnus, who as a result of theological reflection on the concept of the *imago Dei* found her previous conceptions challenged, shared:

I think the best thing they did for me spiritually was to teach me to love God and to accept his love and forgiveness. Keep in mind I was in my late 50s and I had been a victim of domestic violence for a good part of my life and I had all the things that go along with that in terms of obsessive behavior ... I mean I carried a lot of fear, a lot of insecurity, a lot of anger. The idea that I had a father who loved me had an incredible impact on me.<sup>23</sup>

A participant in Snapp's dissertation also articulated the sort of paradigm shift that occurred for him when he found his previous assumptions and perspectives challenged:

Well, what [spiritual formation practices have] kind of done is changed my paradigm. I've found that I found my identity in the things that I did. Instead of whose I was. And so it changed the way I look at things. I think that just opening my mind to spiritual disciplines, I guess. Which would never have led me to the point of getting on my knees and saying, 'God', which was a real water shed moment And at the same time having to deal with and admit that I've been playing a game with God and for awhile I didn't even realize that, because I hadn't really even thought about it until that moment. That moment in his timing he brought me to realize that. And from that moment on, after that things just began to change.<sup>24</sup>

Nunez summarized that for participants in his study:

...Spiritual formation was not knowing information, spiritual formation was a new perspective the information gave them. Participants described how information could help them interpret everything that happened to them and around them with God's perspective. By being able to gain God's perspective about something, participants described they had been spiritually formed in the process.<sup>25</sup>

Sheard's participants also reported that the spiritual formation component in which they participated had the effect of challenging their previously held internal positions. One student said, "I will do something like meditation on a prayer or meditate on Scripture...

When I do those things it draw me back closer to the Lord. Circumstances don't

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<sup>23</sup>Rhodes, "A Tale of Two Schools," 148–49.

<sup>24</sup>Snapp, "Spiritual Formation," 124–25.

<sup>25</sup>Nunez, "Students' Spiritual Formation at a Christian University," 143.

necessarily change but my approach ends up changing my attitude.”<sup>26</sup>

The process of perspective transformation has been well documented, especially in the literature on transformational learning. In his 1991 book *Transformative Dimensions of Adult Learning*, Jack Mezirow explained this concept and its relevance in the process of deep change:

Perspective transformation is the process of becoming critically aware of how and why our assumptions have come to constrain the way we perceive, understand, and feel about our world; changing these structures of habitual expectation to make possible a more inclusive, discriminating, and integrative perspective; and finally, making choices or otherwise acting upon these new understandings.<sup>27</sup>

Though it seems obvious that awareness of a problem is a prerequisite to solving it, the nature of the implicit makes the preliminary goal of awareness necessary. Bringing non-conscious incongruencies into consciousness leads to a heightened sense of distress, providing motivation and openness for change leading to the more positive experience of congruence.<sup>28</sup>

Steven Garber notes that this process of bringing into alignment belief and behavior is particularly important for traditional university students in late adolescence. He writes:

The thesis amounts to this: The years between adolescence and adulthood are a crucible in which moral meaning is being formed, and central to that formation is a vision of integrity which coherently connects belief to behavior, personally as well as publicly . . .<sup>29</sup>

The process by which students grapple with incongruencies, or do not work through these tension, will have an effect on their development, both ethically and spiritually.

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<sup>26</sup>Sheard, “The Role of Spiritual Formation,” 99–100.

<sup>27</sup>Jack Mezirow, *Transformative Dimensions of Adult Learning* (San Francisco: Jossey-Bass, 1991), 167.

<sup>28</sup>Christopher C. Wagner and Karen S. Ingersoll, “Beyond Cognition: Broadening the Emotional Base of Motivational Interviewing,” *Journal of Psychotherapy Integration* 18, no. 2 (June 1, 2008): 191–206.

<sup>29</sup>Steve Garber, introduction to *The Fabric of Faithfulness: Weaving Together Belief and Behavior* (Downers Grove: InterVarsity Press, 2007): 34.

#### **Hypothesis 4**

*Under conditions in which students gain explicit self-awareness of previously implicit incongruencies with their faith, when facilitators explicitly attend to implicit formation by focusing on praxis and experience and/or by modelling transformation, students experience a reorientation of self in relationship to God and others.*

The motivation and openness to change that results from the distress of newly conscious awareness of incongruence creates an opportunity for the facilitator of transformation to provide an alternative way of being and behaving that resolved the distress. By focusing on praxis (behavior) and experience (being), students are learning and being formed at the implicit, affective level in addition to the explicit, cognitive level. Spiritual disciplines are not merely taught as concepts, but as a *practice*, providing a new felt-experience for students in their relationships with God. Facilitators also use themselves as models of this new way of being and doing, which can be both explicitly and implicitly formative as the student imitates the facilitator and lives in a qualitatively different relationship. As this new way of being and behaving in relationship to God and others is experienced, the student's conceptualization of self in relation to God and to others is reoriented.

When asked about spiritually formative experiences as a student, one participant in the Rhodes dissertation said he had no memory of a spiritual formation emphasis in any of his classes, but did express the impact that a professor's authenticity in the midst of theological reflection had on him:

One thing that stands out in my mind is that G—, who was kind of an icon in theology and . . . I kind of got the idea that he had a rough time himself in his personal life and I don't know what that was about, but it seemed like he was struggling a lot. And somebody asked him, well what does this theological concept, how does it relate to your personal life with God? And he started crying you know right in class, you know? So it was things like that that we saw.<sup>30</sup>

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<sup>30</sup>Rhodes, "A Tale of Two Schools," 140.

Faculty who vulnerably and authentically expressed their spirituality became models to students, helping both to bring awareness to deficits in the students' spiritual lives and to provide a vision for what could be. Another participant in Rhodes' study expressed this dynamic, reflecting on what was formative in his experience: "The class on prayer wasn't very good, but the professor who prayed at the beginning of my *Church History* class—a transformative prayer, it was more that . . . ." <sup>31</sup> Not only can faculty facilitate transformation through modelling, but peers can, as well. A student in Nunez's study remarked on the formative experience of observing the spirituality of other students in the community:

One, I saw the people around me taking it seriously. And I kind of was attracted to that. And so, for example, if I had never seen any Christians who I looked up to who cared about God, and all of a sudden, I did. And it was kind of a big deal to see people who loved God and were living a life that reflected God rather than just calling themselves Christians. <sup>32</sup>

Patty, a participant in Rhodes' study whose words were used earlier to demonstrate the surfacing of implicit incongruencies with her faith, expressed in those same words how theological reflection in an environment of "openness and encouragement to pursue personal wholeness" was formative for her:

I think the best thing they did for me spiritually was to teach me to love God and to accept his love and forgiveness. Keep in mind I was in my late 50s and I had been a victim of domestic violence for a good part of my life and I had all the things that go along with that in terms of obsessive behavior . . . I mean I carried a lot of fear, a lot of insecurity, a lot of anger. The idea that I had a father who loved me had an incredible impact on me. <sup>33</sup>

A sense of knowing at a level deeper than mere cognition can result by coupling reflection with experiential practice. A participant in Snapp's study described "the richness of an encounter with God that transcends the intellect," saying, "Here's

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<sup>31</sup>Rhodes, "A Tale of Two Schools," 140.

<sup>32</sup>Nunez, "Students' Spiritual Formation at a Christian University," 130.

<sup>33</sup>Rhodes, "A Tale of Two Schools," 148–49.



something that you know intellectually, and you've even taught it to people. But then there's an experience and it just kind of clicks for you. It becomes real."

Snapp's study includes a participant who articulated the "spiritual paradigm shift" he experienced and credits to the spiritual formation process of his degree program:

I defined myself as pastor. That was who I was. Now my primary definition of self is "one of God's children" who just happens to be a pastor. So the whole view of what I do and who I am is rooted in that. I think it's a male thing in our society, that we define ourselves by what we do. So that's been a big change, to see who I am. Because if I define myself as a pastor, there's certain things I have to do. Whereas if I define myself as a child of God, well then every once in awhile I just want to spend time with him. It's out of a "want to" rather than a "have to" kind of thing.<sup>34</sup>

Participants in Sheard's dissertation also related a significant change in their relationships to God and their views of themselves in light of that change: "Spiritual Formation classes allowed me to just look at me-before-God; me in relationship to God. I would look at who God had made me to be. Independent of stuff in my world, just God and I."<sup>35</sup>

Sheard makes an interesting observation about the changed perspectives that resulted from student's spiritual formation experience. Despite the diversity in both the student body and faculty at the Christian higher education institution in which the study was connected, the transformation that students experienced was not so much in the particulars of their cognitive theological knowledge as much as in relational knowledge of God:

Despite many of the responses given to other questions indicating that there have been changes in viewpoints, the graduates seemed unwilling to admit to changes in their theology. Some participants admitted to a closer, more personal relationship with God, and others claimed there was no difference in the relationship. Terms used by the participants to describe a change in their views of God focused on the idea of having a closer relationship with him; and that God was personalized, softer, loving, and relational.<sup>36</sup>

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<sup>34</sup>Snapp, "Spiritual Formation," 126.

<sup>35</sup>Sheard, "The Role of Spiritual Formation," 101.

<sup>36</sup>Sheard, "The Role of Spiritual Formation," 112.

This observation seems in line with the description of student spiritual formation in all the primary cases studies, with a great emphasis being placed more on the development of a new way of being, relating, and behavior with and in light of God than on transitions from one theological perspective to another.

Others have included the important of a mentor who can embody for the student the changes being desired in the formation process.<sup>37</sup> One final observation should be noted in relationship to the focus on praxis and experience by facilitators of spiritual formation. All four primary studies included data on the cultivation and integration of Christian practices into students' lives. Of all the many practices that are recognized, only two were universally mentioned in all four primary studies: reading Scripture and praying.<sup>38</sup>

### **Integration of the Hypotheses for Research Question 1**

*When students sense psychological safety by feeling accepted, valued, and supported, they become open to undergoing spiritual formation. Spiritual formation begins to take place as students are led to reflect on theology in ways that challenge their implicit assumptions, perspectives, and paradigms, surfacing an explicit awareness of previously implicit incongruencies with their faith. Faculty, peers, or others with whom the student feels psychologically safe can then explicitly facilitate implicit formation by focusing on praxis and experience through the integration of Christian practices (especially reading Scripture and prayer) and by modeling transformation. The practice of these disciplines, as well as the witnessed modelling of transformation, can restart the*

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<sup>37</sup>Steven Garber, *The Fabric of Faithfulness: Weaving Together Belief and Behavior* (Downers Grove: InterVarsity Press, 2007).

<sup>38</sup>Rhodes, "A Tale of Two Schools," 146; Snapp, "Spiritual Formation," 100, 115; Nunez, "Students' Spiritual Formation at a Christian University," 111–12; Sheard, "The Role of Spiritual Formation," 99–100, 137.

*process of reflecting on theology. This process of formation results in an experience of transformation as the student's sense of self-and-God and sense of self-and-other are reoriented by the increasing congruence between the student's implicit and explicit selves (see Figure 9).*

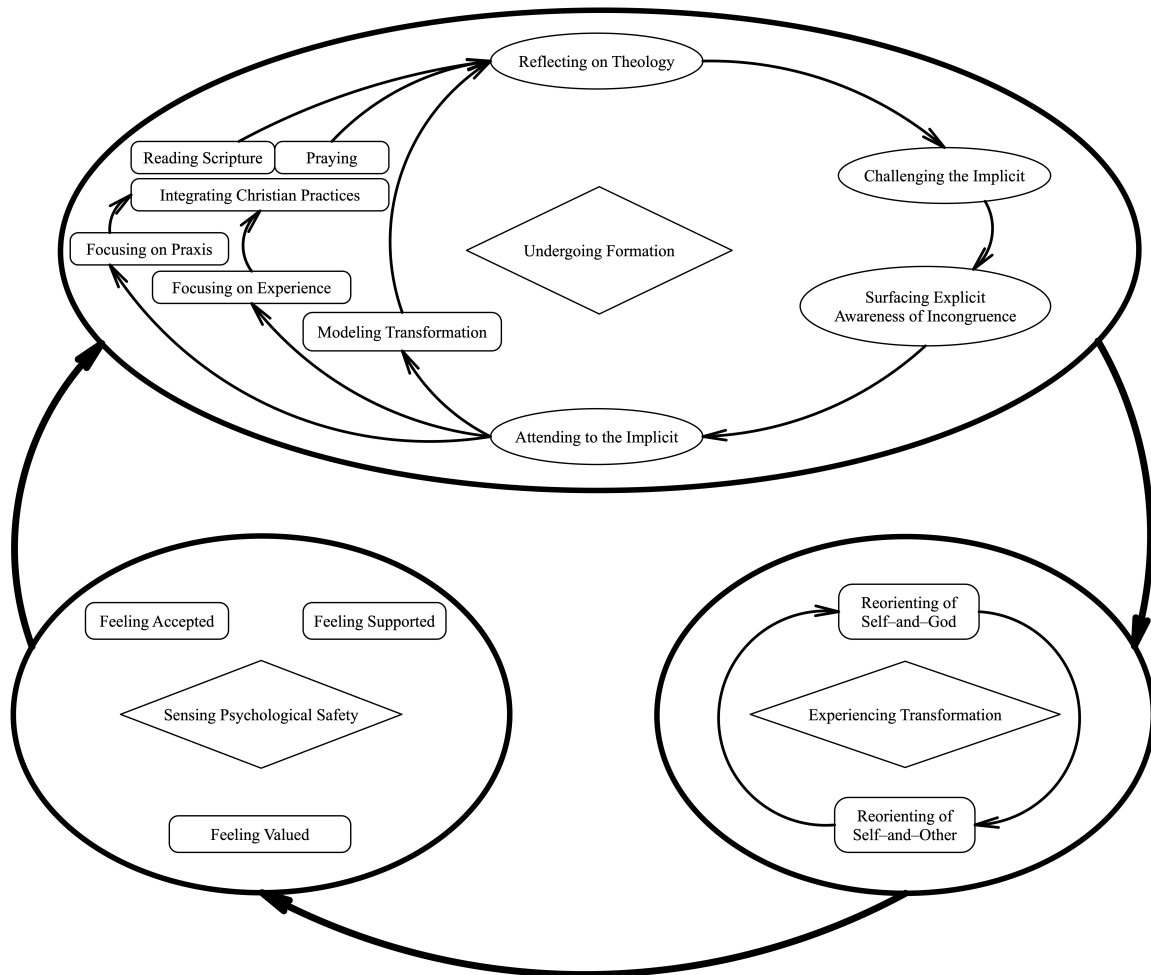


Figure 9. Integration of the hypotheses for Research Question 1

As shown in the section on Hypotheses 1 and 2 above, psychological safety emerged from all the primary studies as essential to the student's experience of spiritual formation. Without feeling accepted, valued, and supported, students were not open to the challenges that surfaced through deep, meaningful theological reflection. However, when

students did sense psychological safety—whether in a classroom with a professor or socially with peers—they reported a willingness to engage in formation processes. Reflecting on theology, beyond merely learning theological propositions, involves a more intentional, typically slower engagement with theological truths. Reflection goes beyond understanding meaning to consider significance, relevance, and implications; this process is akin to the incremental process of transformation through perspective reflection described in Mezirow’s transformative learning theory.<sup>39</sup>

As show in the section on Hypothesis 3 above, the process of reflecting on theology and the challenging of assumptions, perspectives and paradigms that follows leads to students having an increased self-awareness of their previously implicit (largely automated, and either nonconscious or dissociated<sup>40</sup>) incongruences with their faith. The resulting cognitive dissonance creates a degree of stress that, if managed well in a context of continued psychological safety, motivates change and learning.<sup>41</sup>

The desire for relief from the distress brought on by the awareness of incongruence opens a psychic space for another person to act as a guide or facilitator of formation, scaffolding a process of continued reflection and praxis– and experience– oriented change, outlined above in Hypothesis 4. The focus on “doing” and “being” that takes place through engaging Christian practices stimulates learning and formation at the level of implicit knowledge: often non-verbal, non-conscious, and process oriented. These changes can be made explicitly known when the cognitive elements are intentionally coupled with the new felt-experiences of acting out the implications of

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<sup>39</sup>Mezirow, *Learning as Transformation*, 21.

<sup>40</sup>The section below on Research Question 2 will further explain the use of “dissociated” here. At this point, it should just be said that this term is being used to describe a state of being in which one may have a sense of conscious awareness and yet also sense they are in some way split off from themselves or another part of themselves.

<sup>41</sup>Louis Cozolino, *The Neuroscience of Human Relationships: Attachment and the Developing Social Brain*, 2<sup>nd</sup> ed. (New York: W. W. Norton & Company, 2014), 82–83.

particular propositional truths. Regular participation in Christian practices can create a steady, rhythmic habit of acting upon theological truths. Alongside the presence of another (or several others) modelling the potential outcomes of formation, students undergoing formation can begin to imitate their guides and will do so if they see these guides as possessing the congruence between faith and practice they are seeking. Additionally, the presence of a model, whose greater congruence between faith and practice highlights the student's incongruent state, along with the focus on praxis and experience that comes from engaging in Christian practices, sets up the student for new opportunities for theological reflection. Thus the process of undergoing formation can begin again, potentially at an even deeper level.

The result of the formation process is transformation,<sup>42</sup> and the primary studies in this research show one expression of that transformation can be the student's experience of reorientation of self-and-God and of self-and-other. Support from the primary studies for this statement is provided above in the section on Hypothesis 4. The felt sense of one's relationship with God is strengthened as congruence between belief and behavior increases. The student's sense of self changes as the relational experience of God changes.<sup>43</sup> The same dynamic is true in the relational experience with other people. These shifts in relational experiences with both God and others, especially others who model the transformation the student desires, mutually reinforce one another and bring about greater integration in the student's own sense of self: the student can be the same person before God and others. Snapp articulates this outcome of formation, summarizing:

For several of the students, the formation process provided much needed time and space for them to cultivate an intimacy with God that they had not known before... Those students who experienced a significant transformation in their lives described experiencing a sense of connection to God that they had previously not known;

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<sup>42</sup>Evan B. Howard, *A Guide to Christian Spiritual Formation: How Scripture, Spirit, Community, and Mission Shape Our Souls* (Grand Rapids: Baker Academic, 2018), 96.

<sup>43</sup>Howard, *A Guide to Christian Spiritual Formation*, 85.

others spoke of gaining an awareness of who they were, apart from performing, or doing, and found an enhanced self-efficacy through their deepening relationship with God. Some mentioned the intimacy fostered through spending time with God, hearing God's heart for them challenged the mal-constructions they held of themselves and their ministry. This resulted in one student's freedom from guilt that had plagued him through thirty years of ministry, stemming from a sense that he was "not good enough."<sup>44</sup>

Of another participant, Snapp reports:

He found that he no longer was interested in what others thought of him or how they could impact his career. Instead, he found, as did many others in the study, a renewed sense that they were in ministry to serve God, not to please others, and to find their source of identity in that calling alone.<sup>45</sup>

The previously quoted words from a participant in Sheard's study who was reflecting on "discovering [her] own identity with God" bear repeating here: "Spiritual Formation classes allowed me to just look at me-before-God; me in relationship to God. I would look at who God had made me to be. Independent of stuff in my world, just God and I."<sup>46</sup>

When students experience a positive reorientation of their sense of self-with-God and self-with-others, the factors that lead to psychological safety—feeling accepted, valued, and supported—are more readily prevalent, and a context for even further, deeper formation is born.

## **Research Question 2**

How do emerging theories on student spiritual formation reflect the growing body of knowledge about human development from affective social neurobiology?

The hypotheses emerging from the meta-analysis were read according to a transdisciplinary process alongside research findings from the field of affective social neurobiology. A standard practice within grounded theory research is the process of memoing the emergence of concepts, phenomena, and categories, as well as the relationships among them as a way of recording the development of the research in the

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<sup>44</sup>Snapp, "Spiritual Formation," 161–62.

<sup>45</sup>Snapp, "Spiritual Formation," 162.

<sup>46</sup>Sheard, "The Role of Spiritual Formation," 101.

mind of the researcher.<sup>47</sup> In view of Research Question 2 and its consideration of affective social neurobiology, this researcher wrote over 600 memos of possible connections between the data emerging from the meta-analytic process and research from affective social neurobiology. Many of these memos provided the raw material for this section. This section provides an initial articulation of the reflections on an affective social neurobiologically informed interpretation of the results of the grounded qualitative meta-analysis.

The four hypotheses and their proposed integration from the previous section were rearticulated in light of the reflections of affective social neurobiological research on human development discerned within each (see Table 2). This section focuses on describing the possible neurobiological correspondences with the phenomena concerning student spiritual formation as it emerged in the meta-analysis. Implication and potential applications of these findings will be reserved for chapter 5.

### **Hypothesis 1a**

*Under conditions in which students experience increased stress and anxiety, when facilitators signal security and can coregulate the students' affect states, students remain in regulated–integrated self–states.*

Classroom settings are often a context of stress, signaling a threat response that brings about an increase in activation of the limbic system and a reduction in activation of the prefrontal cortex.<sup>48</sup> The threat of exclusion or rejection in the classroom—especially at the beginning of a program when relationships among students and with faculty has not yet developed—activates the attachment system, which counts inclusion

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<sup>47</sup>Corbin and Strauss, *Basics of Qualitative Research*, 106.

<sup>48</sup>Carmen C. Moran and Lesley P. Hughes, “Coping with Stress: Social Work Students and Humour,” *Social Work Education* 25, no. 5 (August 1, 2006): 501–17; Hill, *Affect Regulation Theory*, 7.

Table 2. Comparison of hypotheses for research questions 1 and 2

Hypotheses Developed for Research Question 1	Hypotheses Rearticulated for Research Question 2
Hypothesis 1: Under conditions in which students may encounter new and challenging ideas and experiences, when facilitators communicate acceptance, value, and support to students, a sense of psychological safety is established.	Hypothesis 1a: Under conditions in which students experience increased stress and anxiety, when facilitators signal security and can coregulate the students' affect states, students remain in regulated–integrated self–states.
Hypothesis 2: Under conditions in which students sense psychological safety, when facilitators lead students to reflect on theology, students experience a challenge to their implicit assumptions, perspectives, and paradigms.	Hypothesis 2a: Under conditions in which students remain in regulated–integrated self–states, when facilitators initiate right brain reflective processes, students begin to experience conflicting self–states simultaneously.
Hypothesis 3: Under conditions in which students' implicit assumptions, perspectives, and paradigms are challenged, when facilitators create a safe context for students to reflect on these challenges, students experience increased explicit self–awareness of previously implicit incongruencies with their faith.	Hypothesis 3a: Under conditions in which students begin to experience conflicting self–states simultaneously, when facilitators continue to attune, mirror, and coregulate these students, students experience second–order change through the explicit awareness of previously implicit conflicting or dissociated self–states.
Hypothesis 4: Under conditions in which students gain explicit self–awareness of previously implicit incongruencies with their faith, when facilitators explicitly attend to implicit formation by focusing on praxis and experience and/or by modelling transformation, students experience a reorientation of self in relationship to God and others.	Hypothesis 4a: Under conditions in which students experience second–order change through the explicit awareness of previously implicit conflicting or dissociated self–states, when facilitators help students reencode their implicit procedural memory, students develop new internal working models of self–and–other resulting in first–order change.

in the community as a survival need.<sup>49</sup> Should a student experience such a sharp spike in stress that the boundaries of his window of tolerance are crossed, he would devolve into a

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<sup>49</sup>Johnson, *Attachment Theory in Practice*, 6; Hill, *Affect Regulation Theory*, 130.



disintegrated–dissociated self–state of either hypo– or hyperarousal.<sup>50</sup> In such a self–state, the student would be acting on automated scripts encoded in his procedural memory, without the ability to receive new information in a reflective state.

However, when others, like faculty or peers, cultivate a context in which students feel valued, accepted, and supported, they act as coregulating agents against the threat of exile and the ensuing stress that comes with it.<sup>51</sup> The right brain, constantly scanning the environment for social signals of safety or threat, picks up on cues such as vocal tones, facial expressions, pacing, and more as students interact in the classroom. These can have a soothing effect, implicitly signaling to students that they are presently embedded in the relational context the human brain both needs and expects for the mitigation of risk.<sup>52</sup>

### **Hypothesis 2a**

*Under conditions in which students remain in regulated–integrated self–states, when facilitators initiate right brain reflective processes, students begin to experience conflicting self–states simultaneously.*

A student who is asked to merely learn theological content in the form of propositional truths is engaging in a primarily cognitive exercise of left brain processing. However, a student who is asked to engage theology in a reflected manner—moving deliberately, intentionally slow as these theological propositions are held next to a wide array of experiences lived out by the student—will engage more right brain processing of emotional and experiential memory.<sup>53</sup> The increased activation of right brain processing

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<sup>50</sup>Siegel, *The Developing Mind*, 281; Hill, *Affect Regulation Theory*, 6.

<sup>51</sup>Cozolino, *The Social Neuroscience of Education*, 107–07.

<sup>52</sup>James A. Coan and David A. Sbarra, “Social Baseline Theory: The Social Regulation of Risk and Effort,” *Current Opinion in Psychology* 1 (February 2015): 87–91.

<sup>53</sup>Siegel, *The Developing Mind*, 367.

the task of theological reflection can result in the student suddenly holding within his consciousness in one moment a truth he claims to hold precious and a desire, attitude, belief, or behavior he embraces as his own.

When students experience attitudes, beliefs, emotions, desires, or behaviors incongruent with what they claim as their true values and identity, these students experience a compartmentalized dissociated self-state. These systems of memories, sense of self, dispositions, etc., are made up of neural networks that, when activated, can be experienced as nonconscious.<sup>54</sup> This means that an individual can experience and act upon one particular desire while in the compartmentalized self-state and then, upon shifting into another self-state, have no sense of connection to that past desire and be left with great confusion and distress that he acted upon such a desire. Self-states can become conscious and exist in conflict with one another.<sup>55</sup> Such conflict can be the source of dysfunction and distress, especially for adolescents. Conflicts among self-states within an individual result in individuals feeling more disconnected, both from themselves and others.

### **Hypothesis 3a**

*Under conditions in which students begin to experience conflicting self-states simultaneously, when facilitators continue to attune, mirror, and coregulate these students, students experience second-order change through the explicit awareness of previously implicit conflicting or dissociated self-states.*

When undergoing a reflective process on theological truth a student claims to believe brings to the surface a conflicting desire, attitude, belief, or behavior, students may encounter a sense of cognitive dissonance, feeling distress at the conflictual needs

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<sup>54</sup>Hill, *Affect Regulation Theory*, 36.

<sup>55</sup>Siegel, *The Developing Mind*, 211.

underlying both the thought of continuing to experience the now-conscious compartmentalized self-state and the thought of letting it go.<sup>56</sup> The stress response system of the nervous system will be activated, engaging a defensive limbic response toward hyper- or hypoarousal. If the student has the capacity to regulate himself, he may do so, but self-regulation, as a more top-down process, requires more energy consumption by cognitive and attentional processes attempting to suppress somatic responses.<sup>57</sup> With precious resources expended for self-regulation, reflective processing will cease.

However, if the student has other people—faculty or fellow students—who step in to coregulate in the midst of his threat response, he may be able to tolerate the distress arising from the conflicting self-states. Continuing the reflective process in the midst of a stress response not only allows the student’s self-states to move increasingly toward integration, but the very experience of social support in the midst of distress resulting from self-reflection cultivates an increased capacity for future self-reflection. This is because the capacity to be self-reflective emerges through securely attached relational experiences that nurture such reflective processes.<sup>58</sup>

The explicit awareness of previously implicit, conflicting self-states, especially those that had been dissociated, provides an opportunity for individuals to enact second-order change. Second-order change is a change born from self-reflective capacity and self-awareness, whereby one works to think, feel, and act differently in light of newfound awareness of unwanted thoughts, feelings, and actions.<sup>59</sup> In second-order

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<sup>56</sup>Siegel, *The Developing Mind*, 355.

<sup>57</sup>Coan and Sbarra, “Social Baseline Theory.”

<sup>58</sup>Siegel, *The Developing Mind*, 34.

<sup>59</sup>Morris Eagle and David L. Wolitzky, “Adult Psychotherapy from the Perspectives of Attachment Theory and Psychoanalysis,” in *Attachment Theory and Research in Clinical Work with Adults*, ed. Joseph H. Obegi and Ety Berant (New York: Guilford Press, 2010), 360.

change, a student may still want to engage in a behavior incongruent with his faith, but he willfully chooses to act in congruence out of a greater desire for faithfulness.

#### **Hypothesis 4a**

*Under conditions in which students experience second-order change through the explicit awareness of previously implicit conflicting or dissociated self-states, when facilitators help students reencode their implicit procedural memory, students develop new internal working models of self-and-other resulting in first-order change.*

Greater internal congruence through second-order changes, coupled with social support that increases capacity for self-regulation, opens the way to deeper changes as facilitators target the student's implicit procedural memory in two ways: (1) by focusing on praxis and experience through Christian practices, and (2) by calling forth imitation from the student through modeling changes the student now desires. A consistent, rhythmic participation in Christian practices has the potential to reencode procedural memory through neuroplastic change. Whereas states of moderate or high stress inhibit neuroplastic change, the grounded experiences of reflection undertaken through Christian practices can facilitate changes to neural structures, especially when practiced frequently.<sup>60</sup> Meditating on Scripture and self-reflective prayer builds a reflective perspective and practice into the automated behaviors of the student.

Modeling is a remarkably powerful neurobiological change agent. Human beings have “mirror neurons,” which give us the ability to quickly read and assemble an unknowable number of cues—microexpressions, vocal inflections, slight bodily shifts, etc.—to interpret another person's intentional state, simulate her internal state, and imitate her behavior.<sup>61</sup> Mirror neurons are what allow us to feel along with characters in

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<sup>60</sup>Cozolino, *The Social Neuroscience of Education*, 83.

<sup>61</sup>Siegel, *The Developing Mind*, 156.

movies, sensing internally what we interpret they are experiencing. When a student sees another person living out the faith congruence she desires, her mirror neurons allow her to feel with this person as she observes the lived faith. State of emotion and affection can be shared in a state of resonance, and this internal affective state provides an internal motivation to behave in accordance with these new impulses.<sup>62</sup> Mirror neurons enable our motor actions to match another person's. Models provide students undergoing formation shifts in subcortical states resulting in new affective responses to spiritual concepts and experiences, as well as living behavioral instruction on carrying out behaviors congruent with these new affective responses.

Over time, the reflective processes and modeling bring about a reencoding of the student's implicit, procedural memory, resulting in first-order change. Whereas second-order change refers to "changes in self-reflective capacity," first-order change refers to "change in the very tendencies, states, and affects that one is reflecting on."<sup>63</sup> These are changes that take place at the implicit, automatic level. Scripture is read not because the student must, but because she wants to. Prayer is no longer a discipline, but is now a desire.

While these practices are being undertaken and as the student is being influenced by a model of spiritual change, the student's internal working models are being challenged and changed, as well. The reflective process of the practices makes the knowledge of God more experiential and relational. Her relationship with God also feels more authentic as previously dissociated self-states that conflicted with her faith are resolved and integrated and brought into this relationship with God. Simultaneously, an authenticity with others increases as her faith community provides modeling for a new

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<sup>62</sup>Marco Iacoboni, "Imitation, Empathy, and Mirror Neurons," *Annual Review of Psychology* 60, no. 1 (2009): 653–70.

<sup>63</sup>Eagle and Wolitzky, "Adult Psychotherapy," 360.

way of relating with others. The internal working model of self is inseparable from the internal working model of other. This means that as the student begins to see God differently, she sees herself differently in light this new, implicit knowledge of God.

Indeed, research has shown that through engaging in Christian practices, one can develop a secure attachment to God as the primary relationship in her life.<sup>64</sup> With God as a source of secure attachment, individuals who previously found their senses of self undergoing continuous shifts as their internal working models of self and other dramatically changed from one audience to the next can now find a sense of identity continuity through the ever-present attachment with an unchanging God. The resulting feeling of increased integration and stability will yield for the individual increased capacity for regulating affect, performing self-reflection, empathizing with others, and more.

### **Integration of Hypotheses for Research Question 2**

*When students experience increased stress and anxiety, when facilitators signal security and can coregulate the students' affect states, students remain in regulated-integrated self-states. Repair of the attachment system and integration of self-states begins to take place as students are led in right brain reflective processes that activate conflicting self-states simultaneously, expanding their windows of tolerance for distressing affect states. Faculty, peers, or others who continue to attune, mirror, and coregulate these students can then utilize both explicit and implicit interventions to bring about second-order change through making explicit the previously implicit conflicting or dissociated self-states. These interventions, both explicit and implicit, can result in further right brain reflective processing that activates conflicting self-states and*

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<sup>64</sup>Neubauer, "Prayer as an Interpersonal Relationship"; T. M. Luhrmann, Howard Nusbaum, and Ronald Thisted, "The Absorption Hypothesis: Learning to Hear God in Evangelical Christianity," *American Anthropologist* 112, no. 1 (2010): 66-78; Johnson, *Attachment Theory in Practice*, 40.

*increases distress tolerance. This process of second-order change, when continued in a context of coregulation, results in such first-order changes as a reencoding of procedural memory, development of new working models of self and other, integration of self-states, and increased capacity for affect regulation. (For the integration of hypotheses for Research Question 1, see table 3; see also figure 10.)*

Table 3. Comparison of integration of hypotheses for research questions 1 and 2

Integration of Hypotheses for Research Question 1	Integration of Hypotheses for Research Question 2
When students sense psychological safety by feeling accepted, valued, and supported, they become open to undergoing spiritual formation.	When students experience increased stress and anxiety, when facilitators signal security and can coregulate the students' affect states, students remain in regulated-integrated self-states.
Spiritual formation begins to take place as students are led to reflect on theology in ways that challenge their implicit assumptions, perspectives, and paradigms, surfacing an explicit awareness of previously implicit incongruencies with their faith.	Repair of the attachment system and integration of self-states begins to take place as students are led in right brain reflective processes that activate conflicting self-states simultaneously, expanding their windows of tolerance for distressing affect states.
Faculty, peers, or others with whom the student feels psychologically safe can then explicitly facilitate implicit formation by focusing on praxis and experience through the integration of Christian practices (especially reading Scripture and prayer) and by modeling transformation. The practice of these disciplines, as well as the witnessed modelling of transformation, can restart the process of reflecting on theology.	Faculty, peers, or others who continue to attune, mirror, and coregulate these students can then utilize both explicit and implicit interventions to bring about second-order change through making explicit the previously implicit conflicting or dissociated self-states. These interventions, both explicit and implicit, can result in further right brain reflective processing that activates conflicting self-states and increases distress tolerance.
This process of formation results in an experience of transformation as the student's sense of self-and-God and sense of self-and-other are reoriented by the increasing congruence between the student's implicit and explicit selves.	This process of second-order change, when continued in a context of coregulation, results in such first-order changes as a reencoding of procedural memory, development of new working models of self and other, integration of self-states, and increased capacity for affect regulation.

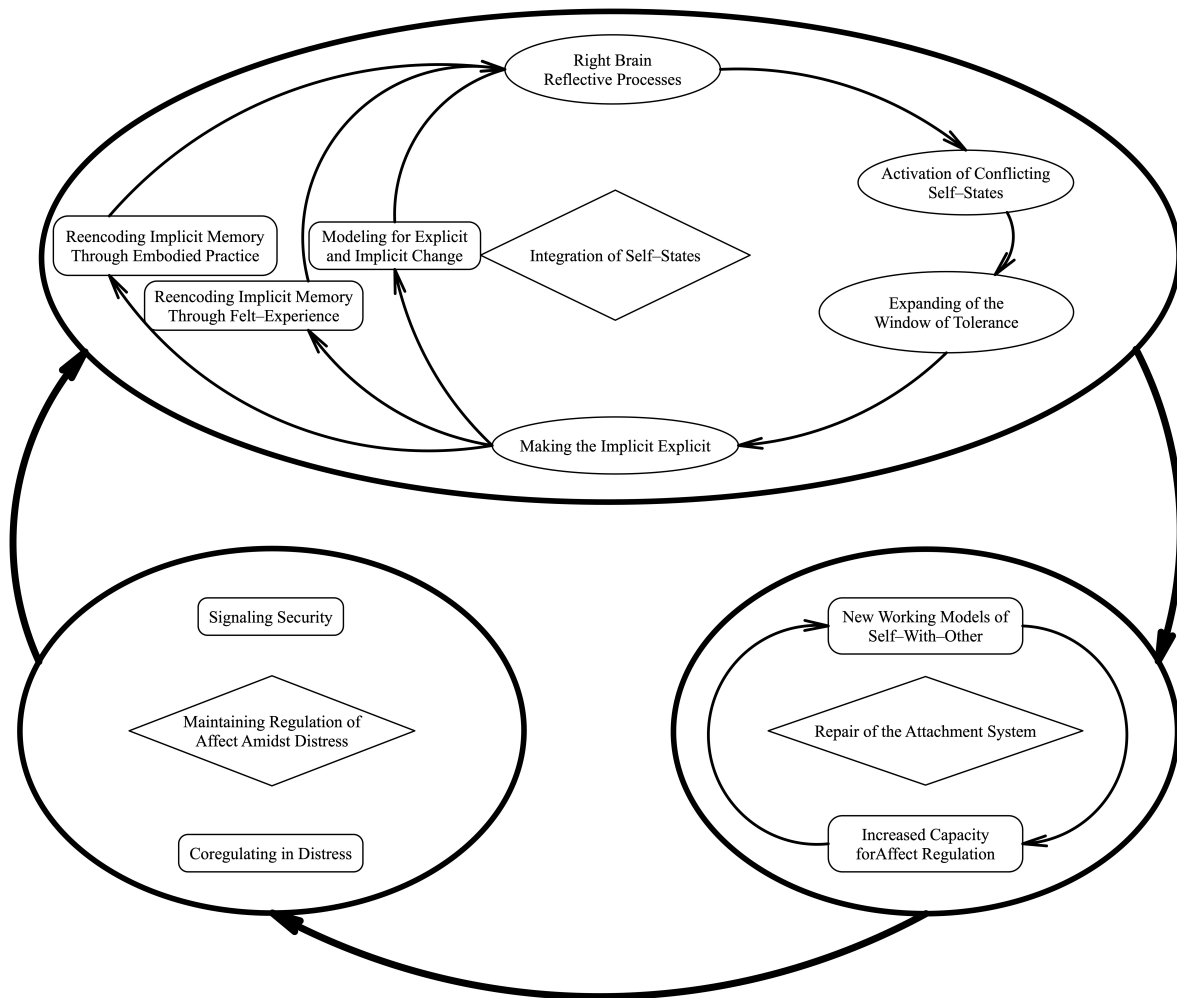


Figure 10. Integration of the hypotheses for Research Question 2

As shown in the sections on Hypotheses 1a and 2a above, the potential for dysregulation and dissociation in the face of the threats encountered by students in the contexts of their educational institutions can be mediated through coregulation. By lending their nervous systems for the purpose of coregulation, students can better tolerate sources of potential distress while undergoing right hemisphere reflective processes. This scaffolding experience builds within the student a greater capacity for self-reflection while also expanding the student's window of tolerance, as stated in Hypothesis 3a



above. These increased capacities likely reflect a strengthening of right mode processing, which is essential for optimal functioning.<sup>65</sup>

Changes at the level of right brain implicit processing bring about first-order changes, described in Hypothesis 4a above. Changes occurring at the level of one's affective states, non-verbal impulses, and procedural memory result in fundamental shifts far deeper than mere behavioral change. As a student's knowledge of God becomes increasingly experiential and relational, the working model of self-and-other shifts, with the student's perception of God giving shape to a new perception of self. Simultaneously, this change is happening with others who act as models, and especially the facilitator(s) of formation who model for the student what congruence, self-state integration, and secure attachment is. Repairs to the attachment system result in greater capacity for affect regulation, with which students can tolerate the necessary distress for further experiences of formation.

### **Transposition and Composition of Research Findings**

The translation process of transdisciplinary scholarship outlined by Johnson requires that some material, especially that from the scientific disciplines, be "transposed" from concern only with the biological, psychological, and sociological realms to interaction with the higher realms of ethics and spirituality.<sup>66</sup> Then the transdisciplinary scholar is to compose a new text for the Christian community. This section will seek to translate the findings of the grounded qualitative meta-analysis and corresponding reflections from affective social neurobiology into their ethical and spiritual dimensions and begin an initial composition of Christian transdisciplinary scholarly work (see figure 11).

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<sup>65</sup>Hill, *Affect Regulation Theory*, 74–75.

<sup>66</sup>Johnson, *Foundations for Soul Care*, 234.

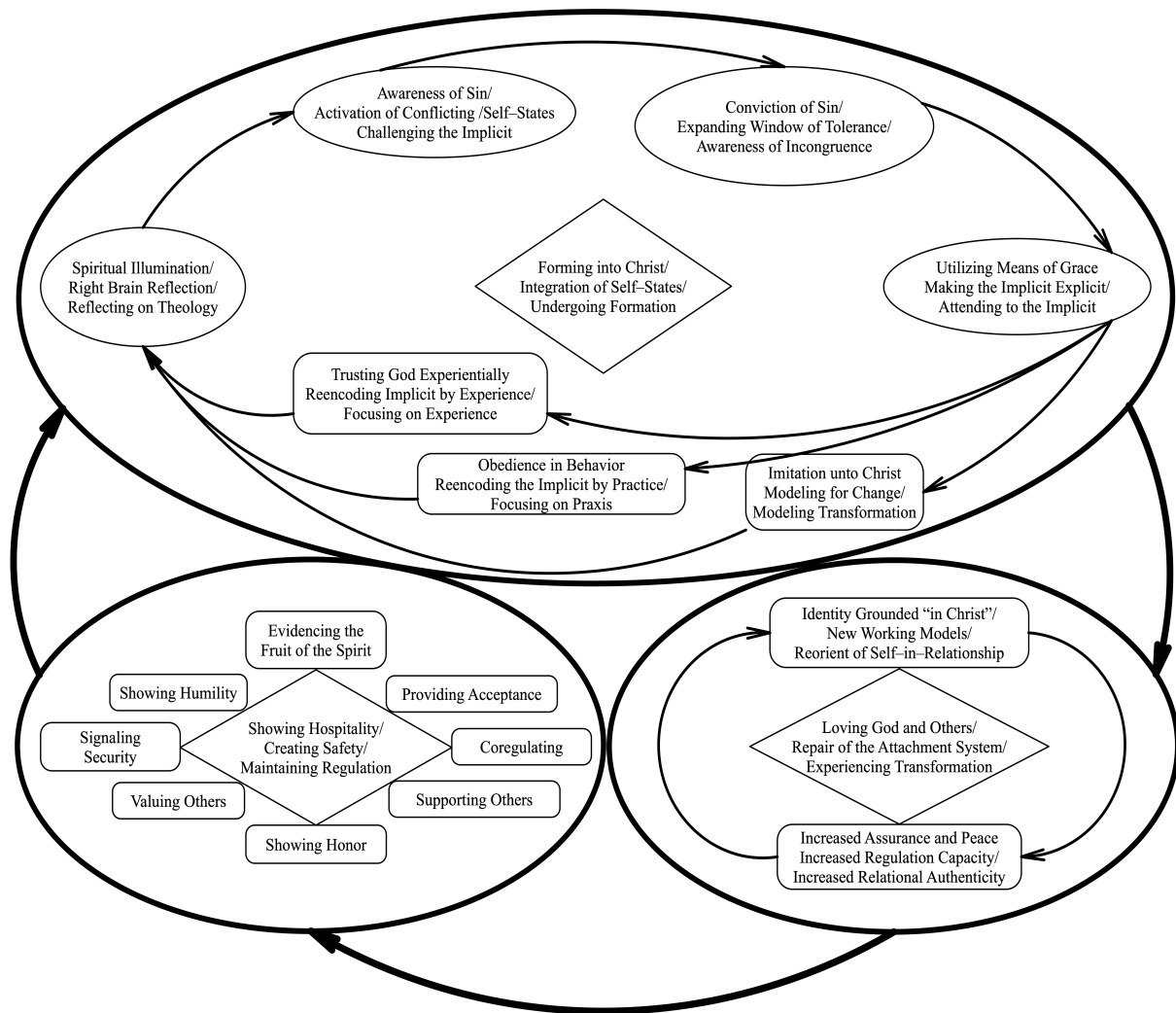


Figure 11. Transdisciplinary transposition of research findings

Should one read only the previous section answering Research Question 2, one may think the phenomenon of student spiritual formation can be explained by purely biophysiological mechanisms. Indeed, the process that students experienced described by all of the primary studies does, in fact, have corresponding physiological realities. Similarly, should one read only the previous section answering Research Question 1, one may think the phenomenon of student spiritual formation can be explained by purely

psychosocial mechanisms. While it is true that psychosocial dynamics are clearly at work in this process, that does not mean something more is not taking place.

Johnson's four orders of humanity—the biophysiological, the psychosocial, the ethical, and the spiritual—expounded in chapter 2, are inseparable realms of human experience and existence. Student spiritual formation does involve the use of the biophysiological mechanisms designed by God in his creation of this world and of humanity more specifically. Though individuals who have experienced regeneration by the Holy Spirit have the advantage of spiritual life, a renewed nature, and sanctifying grace, they continue to experience effects of the fall. Students, like the rest of humanity, come with developmental deficits in neurophysiological capacities, such as affect regulation and the attachment system, causing dissociated and compartmentalized self-states in which people at times think, feel, and act in ways contrary to their own sense of identity and values. Given the nature and extent of the fall, we should expect some degree of corruption in our bodies as they, along with the rest of creation, long for freedom from the bondage brought on by the introduction of sin into the world (Rom 8:20–23). The formation process also has a corresponding psychosocial reality, whereby mental schema and relational scripts make up working models of self and other, leading people to have defensive reactions that break from their normal explicit self-identities. Students, no different from the rest of humanity, will begin the process of spiritual formation without a fullness of love for God and neighbor, impaired psychosocial constructs, and biophysiological deficits.

A clear finding from the meta-analysis is that without a sense of psychological safety, students are more likely to experience a level of distress that decreases their capacity for the processes involved in formation. This calling to provide a sense of safety is an obligation of hospitality, of making room for the sojourner, which the new student certainly is (Rom 12:13; Lev 19:34). Evidencing the fruit of the spirit—especially love, patience, kindness, gentleness, and self-control—makes room for the student to relax into

a sense of safety (Gal 5:22). Showing honor to students, as we are commanded to do (Rom 12:10), helps them to feel valued. By acting in these ways, not only is Christ being served (Matt 25:40), but facilitators and/or peers are coregulating the nervous systems of anxious and distressed students, easing the burden on their prefrontal cortices, and facilitating a psychic space of openness to formative reflection.<sup>67</sup>

With psychological safety established, students can then be led in a reflective process of formation by a facilitator. The facilitators can be peers, faculty, administration, or other adults, though in the primary studies the majority of the focus was on faculty and peers as facilitators. In spiritual formation, the process is one of formation unto Christ and his likeness (Rom 8:29; 2 Cor 3:18; Gal 4:19). Thus facilitators begin to put the truth about Christ before students. This is done explicitly through the teaching of propositional truths (systematic theology, biblical studies, etc.). Learning these propositional truths involves a left brain processing. The truth about Christ is also put before students implicitly, through the introduction of reflective processes and modelling, which involve right brain processing. Reflective processes bring focused attention to brain activity in ways that promote neuroplastic change, which can be done with intention and purpose for spiritual formation.<sup>68</sup>

Facilitators initiate a reflective process in students whereby the propositional truths about Christ are not confined in left mode processing, but become the subjects of the more experiential right mode processing.<sup>69</sup> The right hemisphere, which perceives patterns and functions more holistically, works to provide emotional content by which incoming data receives a felt-sense and can be evaluated.<sup>70</sup> Emotions also provide the

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<sup>67</sup>Coan and Sbarra, “Social Baseline Theory.”

<sup>68</sup>Jeffery M. Schwartz. “Neuroplasticity and Spiritual Formation.” The Table. April 18, 2019. <https://cct.biola.edu/neuroplasticity-and-spiritual-formation/>

<sup>69</sup>Siegel, *The Developing Mind*, 239–40.

<sup>70</sup>Johnson, *Attachment Theory in Practice*, 35.

motivating impulse for behaviors.<sup>71</sup> By slowing students down with theological truths and having them consider through reflection issues of obedience, desire, and trust, the right mode processing of their brains will begin to produce emotional responses and behavioral impulses that are incongruent with their “normal” way of feeling and acting. As an example, an impulse to begin tithing may be in conflict with a fear of scarcity or appetite for extravagance that has up to that time governed the student’s use of money and was in all likelihood largely implicit. Thus the reflective process on scriptural and theological truth begins to surface internal states of conflict and awareness of self–states incongruent with one’s faith. As the Holy Spirit providentially guides the student’s experiences and perhaps directly influences the formation process, the student becomes aware of these areas of sin and begins to cultivate a felt–sense of distinguishing these conflicting states for his or her “true self.”<sup>72</sup>

The awareness of sin is not sufficient for change, however. Students must continue to feel a sense of psychological safety to tolerate the necessary distress that comes with facing the reality of sin and the need for repentance. Previously unknown or dissociated incongruent self–states likely developed as survival strategies. Called upon to now trust the Lord over their defense mechanisms, students will encounter the activation of their bodies’ threat response systems, with their affects moving toward hyper– or hypoarousal. Yet in a safe relational context in which coregulation keeps the student in an integrated–regulated self–state, students can face more fully a genuine conviction for sin, a “godly grief” that “produces a repentance that leads to salvation without regret” (2 Cor 7:10). As the awareness of incongruence becomes more complete, the student’s window

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<sup>71</sup>Siegel, *The Developing Mind*, 148.

<sup>72</sup>Schwartz, “Neuroplasticity and Spiritual Formation.” The “true self,” according to Schwartz is “the self that we form through our pursuit of inner dialogue with our wise advocate [the Holy Spirit] and through the grace delivered by it. We receive grace through the Holy Spirit in that inner dialogue and as we seek that guidance, we become our true self.”

of tolerance is expanded, allowing an increased capacity to experience the necessary distress felt when incongruencies between self and faith become explicit.<sup>73</sup> This expansion readies the student to face similar moments of conviction again in the future.

While believing students can be assured of God's forgiveness after they have felt conviction for and confessed their sin (1 John 1:9), they must still now face the task of living out their repentance, of changing their thinking, feeling, and behaving to bring about greater congruence with their faith. Here facilitators can introduce means of grace as potential mechanisms of change toward conformity. Engaging in and cultivating Christian practices can bring about neuroplastic change in two ways: through behavioral obedience and experiential trust. Repeated obedience to the commands of God, especially when done routinely and rhythmically as in the practice of a discipline, encouraged neuroplastic change in the brain's structure and function.<sup>74</sup> Similarly, as a student prays and reads Scripture trusting in God's presence and working, this relational-experiential awareness activates the attachment system of the body and brain.<sup>75</sup> All of these experiences predominantly take place through right mode processing, anchoring theological truths previously known by the left brain within the right brain, as well. The bilateral integration is a sign of health and increases capacity for flourishing. The experiences of change and changed behaviors reencode implicit procedural memory in the brain, resulting in a readiness for more formation through reflection on Christ as the Spirit illuminates the truth.

The result of this formation process is the transformation of the student. Having now a greater knowledge of God in Christ, both propositionally and relationally, the student experiences the repair to his attachment system as he is better able to love

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<sup>73</sup>Siegel, *The Developing Mind*, 281.

<sup>74</sup>Kini et al., "The Effects of Gratitude Expression on Neural Activity."

<sup>75</sup>Luhrmann, Nusbaum, and Thisted, "The Absorption Hypothesis."

God with his whole being and love his neighbor as himself. These spiritual and ethical reforms are made possible through the healing that has taken place in the biophysiological and psychosocial orders. Biophysiologicaly, the formation process, completed as an embodied soul embedded in relationships, has provided experiences of healing for neural deficits in the regulation of particular affect states, such as shame, anxiety, pain, etc. Psychosocially, the internal working models of self and other have undergone an evolution in light of the truth of who God is in Christ and who the student is in Christ. Calvin began his *Institutes of Christian Religion* with a powerful observation of the relationship between knowing God and knowing ourselves:

Our wisdom, insofar as it ought to be deemed true and solid wisdom, consists almost entirely of two parts: the knowledge of God and of ourselves. But as these are connected together by many ties, it is not easy to determine which of the two precedes and gives birth to the other. . . . Every person, therefore, on coming to the knowledge of himself, is not only urged to seek God, but is also led as by the hand to find him. On the other hand, it is evident that man never attains to a true self-knowledge until he has previously contemplated the face of God, and come down after such contemplation to look into himself.<sup>76</sup>

Having reflected on himself and God, through meditation on God's Word and guidance by the Holy Spirit, the student knows both God and himself better. The student now knows God more authentically, knows himself more authentically, and can thus know others more authentically. With God now acting as a secure base—a rock to which he can continually come (Ps 71:3), whose word is a secure anchor for the soul (Heb 6:19)—the student has an increased internalized sense of safety and greater capacity for ongoing reflection and formation.<sup>77</sup>

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<sup>76</sup>John Calvin, *Institutes of the Christian Religion*, trans. Henry Beveridge (Peabody, MA: Hendrickson Publishers, 2008), 4–5.

<sup>77</sup>Richard Beck, "God as a Secure Base: Attachment to God and Theological Exploration," *Journal of Psychology and Theology* 34, no. 2 (June 1, 2006): 125–32.

## CHAPTER 5

### CONCLUSIONS

This study examined the phenomenon of student spiritual formation at Christian higher education institutions and the extent to which emerging theories on student spiritual formation reflect findings from the field of affective social neurobiology. The methodology utilized for the examination of the phenomenon of student spiritual formation, grounded qualitative analysis, had not previously been employed and represented a gap in the research literature. Prior to executing this study, I performed a review of relevant literature in the domains of biblical, theological, and philosophical foundations, Christian student spiritual formation, and affective social neurobiology. I conducted the grounded qualitative meta-analysis on four previously conducted studies and then followed a method for transdisciplinary analysis to produce a distinctly Christian reading of the results of the meta-analysis through research on human development from affective social neurobiology. This final chapter presents the conclusion drawn from the analysis of findings, including implications, applications, limitations, and potential areas for further research.

#### **Research Implications and Applications**

This section will elucidate both implications and applications from the research findings. The focus will be primarily on the transdisciplinary analysis of data on the phenomenon of student spiritual formation in light of findings from affective social neurobiology rather than individual findings developed in the process of reaching the transdisciplinary analysis.



## **Research Implications**

*The student's own sense of psychological safety is essential to the initiation and continuation of the spiritual formation process.* The most strikingly obvious result from the meta-analysis of the primary studies was the prominence of the theme of psychological safety. Without feeling accepted, valued, and supported in a given social context, students were not open to the formation process. Many students reported that when facilitators attempted spiritual formation apart from communicating acceptance, value, and support, they felt disrespected and judged. This perception could be based in reality, but it could also be the defensive reaction to the perceived threat students experienced in a context in which deeply personal aspects of themselves were going to be challenged by and in front of others who were largely strangers at the time. When they felt safe, however, students were more open to reflective processes involved in formation. This sense of openness is likely the result of the brain's continued state of regulation, in which the higher cortical areas remain engaged.

This state of regulation must be maintained throughout the formation process for it to continue. Psychological safety was important not only as students were invited into the formation process but also as their previously implicit, conflicting self-states surfaced in their awareness. When theological reflection resulted in a challenge to students' implicit beliefs, attitudes, desires, and behaviors, the cognitive dissonance produced distress that must be regulated. The context of psychological safety provides a supportive resource for the regulation of this distress. Not only does the psychological safety born in the relational context of formation help to move students forward in the process, it also cultivates a greater capacity for the students' distress tolerance by scaffolding their experiences and expanding their windows of tolerance.

*Beyond a merely cognitive reception of theological propositions, meaningful theological reflection provides the catalyst for the spiritual formation process.* The knowledge of theological propositions does not in itself yield transformation. Students

with greater neural integration and capacity may need less assistance bridging the divide between left mode processing cognitive learning and right mode processing affective experience. Those with the most optimal development may even do so readily and without prompting. However, for those students with various degrees of neural deficits, assistance in reflective processing will prove necessary.

Reflective processing of theology prompts the student to simultaneously consider both a theological propositional truth and his or her emotional and behavioral life. Since emotions act as the motivating impulse for behaviors, one's emotional and behavioral lives are intricately connected. For one's lifestyle to become congruent with one's faith, emotions act as the bridge between propositional theological truth and corresponding behaviors. Developing affective–emotional attachments to theological truth as a result of reflection yields behavioral change in the direction of congruence. This is a process that may begin with wrestling over conflicting emotions, with a more general “desire to please God” winning out on the more specific desire to act in a particular incongruent and sinful way. The process of formation is likely to begin with the more general motivation of love for God and desire to please him and move over time toward an affect–emotional pleasure in obedience to the more specific commands and truths of Scripture.

*The spiritual formation process necessarily involves a level of distress for the students in process.* As reported in both the literature review of chapter 2 and the findings of chapter 4, mild degrees of stress provide motivation in all forms of learning. Spiritual development shares this need for experiential challenge that brings about a feeling of distress on the part of students. It is the distress of “godly grief” that brings about “repentance that leads to salvation without regret” (2 Cor 7:10). Distress is to be expected when students have a felt-sense of incongruence between aspects of self or self–states and the truths they claim to believe.

Students who enter the process with pasts that include trauma and neglect,

particularly their relational experiences of infancy and early childhood, will have developmental deficits that could challenge their ability to tolerate the distress of the formation process. These students will require greater levels of support from facilitators of formation and the community moving through the process with them. For those with maladaptive working models of other, the reception of this support and the use of community or leaders as a resource will begin an initial challenge and restructuring of their internal working models of self and other.

*Focusing on praxis and experience facilitates an internalization of the changes taking place in the formation process.* “Doing,” especially if repeated and if done with emotional significance, affects neuroplastic alterations, as does the repeated experience of new, emotionally significant states of “being.” A theological reflection consisting of “doing” and “being” cultivate a felt-knowledge rooted in right brain processing far more likely to result in congruent affective, emotional, and behavior states than propositional knowledge rooted in left brain processing. Through repetition and the power of emotional connection, this right mode processing reencodes the implicit procedural memories.

Introducing Christian practices is an effective way of cultivating a focus on praxis and a focus on experience to students in spiritual formation processes. Christian practices can be means of grace, especially praying and reading and meditation on Scripture, whereby the Spirit of God imparts to the believer the grace of God for sanctification. Spiritual disciplines are “practiced,” meaning they are intended for regular, rhythmic inclusion into one’s lifestyle and ways of being and doing. Such a practice of reflectively taking in the Word of God and relating to God in prayer results in a renewal of the mind that reaches deeper than learning Bible content.

Modeling also provides a means by which implicit procedural memory can be reencoded in students. The Scripture is clear on importance and power of modeling faith for others. Paul writes to the Corinthian church, “Be imitators of me, as I am of Christ” (1 Cor 11:1; see also 1 Cor 4:15; Phil 3:17; 1 Thess 1:6; 2:14; 2 Thes 3:7, 9). The writer of

Hebrews commands believers, “Remember your leaders, those who spoke to you the word of God. Consider the outcome of their way of life, and imitate their faith” (Heb 13:7). God designed the human neurobiological system to include mirror neurons, which evaluate and interpret signals from others to replicate their internal states in our bodies, motivating us to imitate their external behaviors. As students spend time with and see others who are living out the faith congruence they have come to seek, they will implicitly begin to share their internal affective states and behavioral responses. As an example, if a student experiences a faculty member’s excited, joyful affective state during a lecture on biblical truth, that student can attune to the professor and enter a state of affective resonance, which will both increase the student’s capacity and tendency toward this response to biblical truth and provide a model for the student of what to do externally with that internal impulse.

*The student’s spiritual formation unto Christ will necessarily involve a reorientation of the conception of God, self, and others.* As students become more like Christ, they are experientially less like the “selves” they were prior to that transformation. A reorientation of self is essential to formation. Similarly, students will come to see God differently in the process of spiritual formation. This change is not necessarily theological, in the sense of believing a different set of propositional truths about God. As shown in the meta-analysis of the primary studies, the change in the concept of God takes place in relational–experiential terms. Through the process of reflection, the practice of spiritual disciplines, and increased congruence between faith, feelings, and lifestyle, students know God more deeply, having had a felt–experience of him through prayer, his Word, and his indwelling Spirit.

Self–reflection will be an integrally related component to reflection on God in the process of spiritual formation. A. W. Tozer wrote, “What comes into our minds when

we think about God is the most important thing about us.”<sup>1</sup> C. S. Lewis responded to this notion:

I read in a periodical the other day that the fundamental thing is how we think of God. By God Himself, it is not! How God thinks of us is not only more important, but infinitely more important. Indeed, how we think of him is of no importance except insofar as it is related to how He thinks of us.<sup>2</sup>

Tozer and Lewis are attempting a bifurcation that is neither necessary or possible. As shown in the full quote from Calvin in chapter 4, the knowledge of God and self are intimately related and inseparable, and our understanding of who we are is based upon our understanding of who we are to God. As the practice of spiritual disciplines increases the student’s experiential knowledge of God, God becomes an ever-present “Other” with whom the student is in relationship. Additionally, the facilitator of the spiritual formation process, as well as others with whom the student is undergoing the formation process, can provide experiences of challenge and change to the working models of other, especially as they continue to provide a sense of acceptance, value, and support to students in the midst of their faith incongruencies surfacing.

Attachment science has shown the importance of working models (IWMs) of self and other, as detailed in the literature review of chapter 2. When IWMs shift toward secure attachment, individuals experience an increased capacity for affect regulation, self-awareness, empathy, and more. Such a shift is a representation of changes to the most fundamental neural networks at work in implicit processing, always at work in the reception, interpretation, and reaction to incoming social data.

*The process of Christian spiritual formation utilizes natural biophysiological and psychosocial means established by God.* Considering the research findings in their entirety, one macro-level finding is that the phenomenon of Christian student spiritual

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<sup>1</sup>A. W. Tozer, *The Knowledge of the Holy: The Attributes of God, Their Meaning in the Christian Life* (San Francisco: Harper & Row, 1978), 1.

<sup>2</sup>C. S. Lewis, *The Weight of Glory*, digital ed. (New York: HarperCollins, 2009), 39.

formation involves and can in part be explained through natural means not unique to the Christian experience. Indeed, many of the patterns and phenomena reported across the four primary studies mirror processes of biophysiological and psychosocial development true to all human beings undergoing a process of formation or development.

These natural means, however, were established by God, as outlined in the section on theological foundations in chapter 2. The autonomic nervous system, attachment system, right brain processing, and more are all designed by God to be involved in the process of conforming individuals to his image. The same is true of the psychosocial realities that emerge from the biophysiological and neurological structures and systems of the body and brain. The process of Christian spiritual formation involves a reordering of not only the spiritual and ethical realms of an individual's life, but involve changes to the psychosocial and biophysiological, as well.

*What distinguishes Christian spiritual formation from other experiences of human development and formation is the content of the gospel and activity of the Holy Spirit.* Understanding that Christian spiritual formation employs natural mechanisms established by God and utilized in all processes of human development and formation does not lead to the conclusion that nothing is then significantly or substantively different to distinguish Christian spiritual formation from these other non-Christian processes. Indeed, the opposite is true, and this is, in the view of the researcher, the most important implication of the research: What distinguishes Christian spiritual formation from other human developmental and formation processes is the content of the gospel, which is the power of God for the salvation of all who believe (Rom 1:16). All people undergo some process of formation; it is the content of the gospel of Jesus Christ, illuminated and activated by the Spirit of God, that allows humans to become more like Jesus.

The gospel message of the incarnation, life, death, resurrection, ascension, and return of Jesus provides several components that shape the spiritual formation process for Christians. The justifying and forgiving work of Christ on the cross establishes a base of

psychological safety with God (Rom 8:32). The ascended Christ poured out his Spirit on all flesh to allow a knowledge of God by experience, as the Spirit leads us into truth, convicts us of sin, and reveals to us the things of Christ (John 16:8, 13–15). The truth of the incarnation means we can read of a Jesus who is fully man, who came as an example for those who believe, demonstrating the way to live a life entrusted to God (1 Pet 2:21).

God works through naturally established biophysiological, psychosocial, and ethical means to bring about Christian spiritual formation by the power of his Spirit according to the gospel of Jesus. We are spiritually conformed to the image of Christ as our ethical being loves God and neighbor more. This ethical reform is a result of changed psychosocial realities, namely our sense of self, God, and others bound up in our internal working models of self and others. These psychosocial models are comprised of neurobiological networks of implicit procedural memory, activated automatically and non-consciously until brought into explicit awareness through the illuminating work of the Spirit. While the natural mechanisms used by God in Christian spiritual formation are not unique to the process, the additional components of the content of the gospel and the activity of the Holy Spirit are. Jefferey M. Schwartz writes on the relationship between neuroplasticity and spiritual growth:

What we want to do is to pursue our spiritual growth and strive to live in imitation of Christ and to view that striving, of course, as being primarily guided by the Holy Spirit. We never want to view this as arising entirely within ourselves without the intervention of the Holy Spirit and apart from our being open to receiving grace. We realize we can't pursue these kinds of high spiritual goals independent of grace due to our sinful nature. This brings us to the central point: that the pursuit of spiritual growth through grace and the Holy Spirit is what changes our brain in ways that make it less and less of an impediment.<sup>3</sup>

## **Research Applications**

*Facilitators of spiritual formation and institutions desiring the spiritual*

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<sup>3</sup>Jeffery M. Schwartz. "Neuroplasticity and Spiritual Formation." The Table. April 18, 2019. <https://cct.biola.edu/neuroplasticity-and-spiritual-formation/>

*formation of their students must attend the students' psychological safety and be prepared for the necessary experience of distress in the students' formation processes.* Since research findings make clear that students must first sense psychological safety before they can or will enter the formation process, those seeking to engage students in this process should be mindful of the necessity to create a climate of safety. This is done through making students feel welcomed, accepted, valued, and supported. The data showed that small behaviors such as remembering a student's name help to cultivate a sense of ease in students who are typically already feeling a greater level of stress than normal. These efforts will usually require time, and facilitators of formation will need to pace their experiences with students to allow for relational connection.

*Facilitators of spiritual formation should be trained to lead students in reflective learning processes.* The types of lecture, assignments, and questions that lead to student reflection do not necessarily come naturally to faculty or mentors. Perhaps training in Mezirow's Transformative Learning Theory would be a helpful entry point into preparing faculty for facilitating effective theological reflection with students. Data from primary studies showed that faculty resistance to spiritual formation components in curricula were based on their feeling ill-equipped.

Reflection takes time and requires going deeper and not just broader. For example, in a systematic theology class a professor can cover more territory by merely handing off propositional truth. Should the faculty member desire to facilitate spiritual formation, he will likely be required to slow down, cover fewer topics in class, and devote time to walking with students in a reflective process that engages right brain affective, experiential, and autobiographical processes.

*Facilitators and institutions desiring the spiritual formation of students should be prepared to teach Christian practices and model spiritual transformation.* In addition to learning to facilitate reflective learning, facilitators of spiritual formation should also be prepared to teach students the practice of spiritual disciplines. Teaching Christian



practices goes far beyond teaching students about spiritual disciplines. Students can be taught what the spiritual disciplines are without being guided through a process of learning how to put them into practice. The two Christian practices named as effective in all four primary studies were prayer and reading and/or meditating on God's Word, which according to Dorothy C. Bass and Craig Dykstra are the two practices that "run through all the others, fostering attention to God, who grounds this whole way of life."<sup>4</sup> One way to teach the practice of these disciplines is by demonstrating them. Faculty can model for students the process of scriptural mediation as they walk through texts in class in a deliberate, reflective manner, expressing along the way their own affective reactions to the passage. Faculty can model prayer by praying, in and outside of class, for their students, by turning to prayer at times throughout a class experience, and by encouraging prayer in the students' lives.

Tools such as journals and reflection papers were mentioned in the primary studies as other means of facilitating engagement in Christian practices. More important than exactly how facilitators of formation impart these practices to students is that they do so consistently. The power of the disciplines is in their continual, rhythmic practice by which the behavior and resulting affective state becomes encoded in the student's implicit procedural memory.

On this point, the work of James Wilhoit can prove particularly useful. In his 2018 address to the Society of Professors in Christian Education, Wilhoit emphasized the important of Christian educators introducing Christian practices to their students in such a way that they experience spiritual transformation while in an academic setting.<sup>5</sup> Wilhoit

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<sup>4</sup>Dorothy C. Bass and Craig Dykstra, "Practicing a Way of Life," in *Practicing Our Faith*, ed. Dorothy C. Bass (Minneapolis: Fortress Press, 2019), 193–202. These same two practices of Scriptural mediation and prayer are identified by James Wilhoit as "placed front and center in Scripture." James Wilhoit, "Teaching Christian Practices in Higher Education." (lecture presented at On Christian Higher Education: Leading & Teaching in the Academy from the Society of Professors in Christian Education, St. Louis, MI, October 25, 2018).

<sup>5</sup>Wilhoit, "Teaching Christian Practices in Higher Education."

stresses the need for educators to remember that spiritual formation is a work of the Spirit that also involves human participation in behaviors that position one to receive God's transforming grace. He also identifies six specific Christian practices that instructors can implement into the classroom and guide students through experiencing: no gossip, gratitude journal, honoring uniqueness, scriptural meditation, breath prayer, and mindfulness. Each of these is accompanied by reflective assignments designed by Wilhoit, as well as some individual meetings whereby he helps students to apply these practices in ways that fit for their uniqueness. Innovative measures such as these should be pursued as facilitators at Christian higher education institutions seek to cultivate Christian practices in students for the sake of their spiritual formation.

*Facilitators and institutions leading students in spiritual formation must remember that a student's capacity for spiritual formation both affects and is affected by ethical, psychosocial, and biophysiological development.* Focusing on the macrolevel implications of the research findings, the concept of capacity is found to have tremendous importance. Students with impairments or deficits in the lower orders will experience limitations in development of the higher orders. If a Christian higher education institution's goal is the formation of Christ in students, the institution must care about far more than conveying propositional spiritual knowledge and enforcing an ethical standard. The institution must also be fostering climates of relational connection that cultivate a sense of safety for students. They must remember how traumas or neglect from earlier developmental periods can result in neurobiological deficits with psychosocial, ethical, and spiritual consequences. Should a student prove to be struggling spiritually or ethically, consideration should be given to the student's background. The institution may be able to provide healing experiences for students with deficits through mentoring, small groups, or other contexts in which the student can experience relational safety and authenticity simultaneously.

*Facilitators and institutions desiring the spiritual formation of students must*

*prioritize the content of the gospel and rely ultimately on the work of the Spirit of God.*

The most important application of the research findings parallels the final implication in the section above: apart from the centrality of the gospel, the student spiritual formation process is indistinct from any other process of natural development or formation in human experience. Should institutions or facilitators of formation neglect the primacy of the gospel, students may experience ethical reform, psychosocial transformation, and biophysiological capacity development, but they will not experience formation unto Christ. Christian spiritual formation is dependent upon the Spirit of God applying the content of the gospel in the formation process.

All theological content, reflective activities, prayer, spiritual discipline practices, etc. should point students back to the work of Jesus. If Christian spiritual formation is meant to bring students into greater conformity with Christ, as chapter 2 argues, the person and work of Jesus must remain at the forefront in the student's experience. As Christ is seen, known, obeyed, and followed, students experience internal and external congruence with their faith, freeing them from the distress of incongruence as the Spirit of God sanctifies them. Beholding Christ in the glory of the gospel is what ultimately brings about Christlikeness:

Now the Lord is the Spirit, and where the Spirit of the Lord is, there is freedom. And we all, with unveiled face, beholding the glory of the Lord, are being transformed into the same image from one degree of glory to another. For this comes from the Lord, who is the Spirit (2 Cor 3:17–18).

### **Research Limitations**

The findings of this study are not generalizable to all student spiritual formation at Christian higher education institutions, but is limited to the individual qualitative studies considered here. However, it is hoped that the hypotheses produced by this meta-analysis, as well as the transdisciplinary interaction of these hypotheses with the neurobiological research, will provide direction for future studies.

## Further Research

This research provides the first known grounded qualitative meta-analysis of previously conducted studies of student spiritual formation. In light of these findings, as well as the implications and limitations associated with this study, the research can be continued in a number of ways. The following list serves as a sample of potential studies that could be done to expand, deepen, and move forward the research completed in this study.

1. The methodology can be replicated among different samples made up of different populations: only undergraduates, only graduate students, only non-traditional students, etc.
2. This study considered only students who participated in on-campus programs. Given the rise in online programs, a study considering how these findings align with similar investigations within a population of online students would provide important data for expanding our understanding student spiritual formation.
3. The Christian higher education institutions that provided the settings for the primary studies utilized in this meta-analysis were diverse, both in terms of theological tradition and geographical representation. Future research could be designed to investigate the experience of student spiritual formation *within* specific theological traditions, or to compare the experience *between* theological traditions. Other potential influences, such as geography, size of the school, average class size, or student-faculty ratio, could similarly be studied.
4. Each of the particular hypotheses emerging from the data analysis of this study can be researched using both qualitative and quantitative methodology:
  - a. Hypotheses 1: Future studies can work to further capture the phenomenon of psychological safety for students in contexts in which spiritual formation is a goal. Researchers can examine this phenomenon from the perspective of the students or from that of the facilitators, including faculty and administration. This research could be done utilizing case study methodology, phenomenological methodology, survey research, or some form of mixed method research.
  - b. Hypothesis 2: Much could be gained by specific investigation into the process of theological reflection through which students come to experience a challenge to their implicit assumptions, perspectives, and paradigms. Grounded theory methodology could be employed by a future research investigating what makes theological reflection effective for the purpose of spiritual formation, as well as discerning the shape of the process. This, too, could be studied from the perspectives of both students and instructors. Phenomenological and case study methodologies would derive important data about the experience of theological reflection, which could then be utilized in crafted an effective quantitative study.
  - c. Hypothesis 3: The bridge between a student experiencing challenges to

implicit assumptions, perspectives, and paradigms and that student having increased explicit self-awareness of those previously implicit incongruencies with their faith is ripe for phenomenological and grounded theory investigation. Many questions arise from this hypothesis: How does psychological safety bridge these two self-states? How conscious are students of this process as they experience it? Do differences exist between those students who all themselves to cross over this bridge and those who do not? All of these questions could be investigated utilizing a case study approach, phenomenology, and ground theory methodology.

- d. Hypothesis 4: This hypothesis claims that the use of Christian practices is a means of explicit attending to implicit processes, resulting in a reorientation of a student's sense of self in relationship to God and others. Future research can be taken in several directions to test this hypothesis. Qualitative researchers could conduct phenomenological studies, grounded theory, and case studies to further develop an understanding of both the experience and process of this transformation through participation in Christian practices. Quantitative researchers could design instruments to measure participation in Christian practices and this reorientation of sense of self for the purpose of looking for correlations and even causal relationships. Lastly, examination of which Christian practices are effective, and why, could be carried out using qualitative, quantitative, or mixed methodologies.
5. The transdisciplinary analysis of data could be brought into a study of the relationship between attachment style and formation, assessing for students' attachment styles before and after program participation in anticipation of potential changes brought about through the formation process.
6. With enough funding and access to the medical technology, researchers could utilize fMRIs to track neurobiological changes in students undergoing formation processes in a longitudinal study. Should the hypotheses of this transdisciplinary analysis be correct, fMRI scans of students who experience spiritual formation would show greater integration of brain functionality, greater connectivity between the right orbitofrontal cortex and limbic system, and possibly among students with more severe trauma histories substantial positive changes in the functionality of the left hippocampal region.
7. Finally, another direction to take this research would involve practical application of neuroscientific research to curriculum in an effort to cultivate effective student spiritual formation processes. Utilizing an action research model to introduce these applications in curriculum design, classroom settings, and pedagogical efforts could prove a means of bringing the insights of this research to the front lines of student spiritual formation initiatives.

## APPENDIX 1

### SUMMARY OF DATA SELECTION PROCESS

Dissertations and theses were selected based upon the following criteria being met:

1. Written in the English language;
2. Completed in the last two decades;
3. Accessible through ProQuest;
4. Identified online with the key terms that included combinations of “student formation,” “spiritual formation,” “transformational learning,” “higher education,” “case study,” and “Christian;”
5. Containing observational and/or interview data about the experience of student spiritual formation at Christian higher education institutions for the purpose of qualitative analysis;
6. Focused primarily on spiritual formation of students enrolled in a Christian higher education institution on-campus program.

Table A1. Summary of data selection process

Dissertation / Thesis		Criteria					
Title	Author	1	2	3	4	5	6
<i>A Study of Three Faith-based Programs for College Students and Recent Graduates</i>	Alexander, Creighton Drew	●	●	●	●		
<i>A literature review of spirituality in the transformative learning process of students in higher education, with implications for online learning</i>	Bañez, Allen M.	●	●	●	●		●
<i>Adult learners and spiritual formation: Exploring outcomes at Christ-centered universities</i>	Barkley, Heather R.	●	●	●	●	●	
<i>Teaching the Teacher: A Case Study of Student Change in a Graduate Program of Education</i>	Bouchard, Judson D.	●	●	●	●		

Table A1 —continued

Dissertation / Thesis		Criteria					
Title	Author	1	2	3	4	5	6
<i>A Model of Servant Leadership in Higher Education</i>	Boyum, Virginia Sue	●	●	●	●		
<i>Instructor interaction as it relates to facilitation of spiritual development within an evangelical institution: A case study</i>	Butler, Joseph E.	●	●	●	●	●	
<i>A Case Study on Spirituality in Senior Center Education: Qualitative Research in Adult Education</i>	Demarse, Laura E.	●	●	●	●		
<i>Sacred circle of learning: A model of transformative theological education</i>	Dodd, Ted	●	●	●	●		
<i>Explaining decisions and gauging impacts: Faculty and administrator perspectives on the alternative delivery of theological education at three Protestant seminaries</i>	Duncan, Tommy LeRoy	●	●	●	●		
<i>The relationship between mentoring and spiritual formation among nontraditional theological seminary students</i>	Dunlow, Jacob	●	●	●	●	●	
<i>Implications of Theological Anthropology for Online Pedagogy in Graduate-Level Ministerial Training</i>	Etzel, Gabriel Benjamin	●	●	●	●		
<i>Self-perceptions of young adult need for support in the development toward personal maturity</i>	Gascho, Victoria R.	●	●	●	●		
<i>Narratives and imagination: The potential to unleash critical reflection skills in demonstration of transformation</i>	Hinrichsen, Bonnie Lee	●	●	●	●		
<i>Theological teaching and spiritual formation: How seminary faculty relate beliefs about teaching, learning and spiritual growth</i>	James, Douglas Lee	●	●	●	●		
<i>Stages of deliberate teacher integration of faith and learning: The development and empirical validation of a model for Christian education</i>	Korniejczuk, Raquel Bouvet de	●	●	●	●		

Table A1—continued

Dissertation / Thesis		Criteria					
Title	Author	1	2	3	4	5	6
<i>Best Practices of Online Undergraduate Spiritual Formation at Select Insitutions of Christian Higher Education: A Delphi Study</i>	Ledbetter, Neal Brian	●	●	●	●	●	
<i>Social, Evangelical, and Contemplative Approaches to Spiritual Formation in the Baptist Tradition</i>	Long, Michael Anthony	●	●	●	●		
<i>An assessment of the missional model of graduate theological education: A case study</i>	Lowin, Clinton William	●	●	●	●		
<i>Five ordinary movements for practical theological spiritual formation</i>	Luna Munger, Christine	●	●	●	●		
<i>An exploratory study of student perceptions concerning their spiritual formation within the Christian college experience</i>	Ma, Stella Y.	●	●	●	●		●
<i>Christian humanistic faith /reason integration in contemporary American Protestant evangelical higher education: A case study</i>	Masterson, David Laurence	●	●	●	●	●	
<i>Striving for the magis: An ethnographic case study of transformative learning and sustained civic engagement at a Jesuit university</i>	McCunney, W. Dennis	●	●	●	●	●	
<i>The integration of mission in the co-curriculum: A case study of Messiah College</i>	McKeon, Margaret J.	●	●	●	●		
<i>Exploring the conceptual compatibility of transformative learning theory in accounts of Christian spiritual renewal at Wheaton College in 1995</i>	McLaughlin, Richard J.	●	●	●	●	●	
<i>Keeping faith with the mission: A case study of faith and learning integration in graduate programs at George Fox University</i>	Miller, Deobrah J.	●	●	●	●		



Table A1—continued

Dissertation / Thesis		Criteria					
Title	Author	1	2	3	4	5	6
<i>Students' spiritual formation at a Christian university: A hermeneutic phenomenological study</i>	Nunez, Aaron M.	●	●	●	●	●	●
<i>A tale of two schools: The spiritual development of leaders in protestant seminaries</i>	Rhodes, Patricia A.	●	●	●	●	●	●
<i>The role of spirituality in transformative learning</i>	Roberts, Nella Ann	●	●	●	●	●	
<i>Best practices of faculty in the spiritual formation of Master of Divinity students</i>	Royael, Christopher George	●	●	●	●	●	
<i>The place of spiritual formation in the context of theological education: A faculty perspective</i>	Saint James, Melanie Lynn	●	●	●	●		●
<i>The role of spiritual formation in the development of religious leaders at George Fox Evangelical Seminary</i>	Sheard, Reed A.	●	●	●	●	●	●
<i>Transformational learning theory and Christian college students in the southeast: A study of faculty mentoring and relational spiritual formation</i>	Shepson, Donald R.	●	●	●	●		●
<i>Spiritual Formation: A case study in a seminary environment</i>	Snapp, Catherine Ann	●	●	●	●	●	●
<i>What Is Christian Higher Education For? An Assessment of Teleological Priorities at Selected Liberal Arts Institutions</i>	Sosler, Alexander Gabriel	●	●	●	●		
<i>Fostering the spiritual development of undergraduates through service-learning</i>	Sterk Barrett, Michelle C.	●	●	●	●		
<i>A training model integrating spiritual formation in theological education</i>	Tucker, Albert Frank	●	●	●	●		●

APPENDIX 2  
CODING FORM FOR ASSESSING STUDY QUALITY  
AND FITNESS<sup>1</sup>

**Objective Components**

1. Statement of the Problem \_\_\_\_\_
2. Relevant Research Question(s) \_\_\_\_\_
3. Stated Purpose \_\_\_\_\_
4. Major Concepts (Conceptual definition relevant?) \_\_\_\_\_
5. Data Sources; Triangulation? \_\_\_\_\_
6. Site (Research setting and time frame) \_\_\_\_\_
7. Research Subjects Description and Size \_\_\_\_\_
8. Method \_\_\_\_\_
9. Findings of the Study (Research questions answered?) \_\_\_\_\_
10. Conclusion (Evident and logical linkage to “problem”) \_\_\_\_\_
11. Recommendations \_\_\_\_\_

**Subjective Components**

12. Overall Quality \_\_\_\_\_
13. Reliability (replicability) \_\_\_\_\_

\_\_\_\_\_

<sup>1</sup>Based on the forms of Celia Stall-Meadows, “Grounded Meta-Analysis of Qualitative Case Study Dissertations in Distance Education Pedagogy” (Ed.D. diss., Oklahoma State University, 1998); and Don Hossler and Patrick Scalse-Love, “Grounded Meta-Analysis: A Guide for Research Synthesis,” *The Review of Higher Education* 13, no. 1 (1989): 1–28.

14. Internal Validity (Does the study's research design support the conclusions?) \_\_\_\_\_

15. External Validity (Generalizability?) \_\_\_\_\_

16. Descriptive Adequacy (logical story construction?) \_\_\_\_\_

17. Researcher/Subject Relationship \_\_\_\_\_

18. Hawthorne Effect?

**Methodological Components**<sup>2</sup>

19. Compatible with Definition of Spiritual Formation? \_\_\_\_\_

20. Appropriate Focus on the Phenomenon of Student Spiritual Formation? \_\_\_\_\_

21. Compatible with Definition of Christian Higher Education Institution? \_\_\_\_\_

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<sup>2</sup>The two methodological components are designed to ensure that the phenomenon being described in each of the selected qualitative studies has continuity beyond the terminology used. Each of the selected studies must share the understanding of Christian spiritual formation and Christian higher education institutions proposed in this study.

APPENDIX 3

SUMMARY OF EVALUATION BASED ON  
QUALITATIVE STUDY CODING FORM

Table A2. Initial data integration for open coding of the meta-analysis

Dissertation / Thesis		Criteria		
Title	Author	Objective	Subjective	Methodological
<i>Adult learners and spiritual formation: Exploring outcomes at Christ-centered universities</i>	Barkley, Heather R.	●	●	
<i>Exploring the conceptual compatibility of transformative learning theory in accounts of Christian spiritual renewal at Wheaton College in 1995</i>	McLaughlin, Richard J.	●	●	
<i>Students' spiritual formation at a Christian university: A hermeneutic phenomenological study</i>	Nunez, Aaron M.	●	●	●
<i>A tale of two schools: The spiritual development of leaders in protestant seminaries (Case Study 1)</i>	Rhodes, Patricia A.	●	●	
<i>A tale of two schools: The spiritual development of leaders in protestant seminaries (Case Study 2)</i>	Rhodes, Patricia A.	●	●	●
<i>The role of spiritual formation in the development of religious leaders at George Fox Evangelical Seminary</i>	Sheard, Reed A.	●	●	●
<i>Spiritual Formation: A case study in a seminary environment</i>	Snapp, Catherine Ann	●	●	●

## APPENDIX 4

### RHODES DISSERTATION OPEN CODING RESULTS

The following concepts and phenomena were created in the open coding process of the Rhodes dissertation:<sup>1</sup>

Asking Questions	Missions
Assessing Outcomes	Personal Spiritual Direction
Assuming Formation	Prayer
Based on Activities	Context: Mornings
Building Relationships	Frequency: Weekly
Mentors	Service
Modeling	Solitude
Celebration	Studying
Challenging Faith Assumptions	Worship Services
Checking the Box	Chapel Participation
Converging for Change	Frequency
Financial Challenges	Theological Reflection
Deferring to the Local Church	Therapy
Leadership Development	Transformation by Osmosis
Opportunities	Using Case Studies
Pedagogy	Accepting Differences
Praxis–Theory–Praxis	Accreditation Standards
Propositional Communication	Based on Personalities
Sender–Receiver	Clarity
Retreats	Conflicting Priorities Between Departments
Sharing a Meal	Desiring Spiritual Formation for Students
Spiritual Care	Disconnection from Classes
Spiritual Disciplines	Duration
Bible Reading	Ethos of Spirituality
Contemplation	Faculty Overload
Devotional Reading	Feeling Accepted
Ignatian Groups	Feeling Valued

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<sup>1</sup>Patricia A. Rhodes, “A Tale of Two Schools: The Spiritual Development of Leaders in Protestant Seminaries” (Ph.D. diss., University of San Diego, 2014).

Freelancing	Required Courses
Funding	DMin
Humility	Internships
Institutional Growth	MA Degrees
Large Size	MDiv
Integration throughout Curriculum	Physical Space/Structure
Lack of Coherent Approach	Pockets of Tranquility
Lacking an Understanding of Spiritual Formation	Prayer Garden
Lacking Intentionality	Seeking Tranquility
Lacking Time and Energy	Small Groups
Mandatory	Student Overload
Mistrust of Catholicism	Weekly Reflection Groups
Multidenominationalism	Alumni
Peripheral/Uncertain Status	Leaders
Psychological Safety	Administrators
Social Concern	Office of Student Life/Affairs
Tension between Scholarship and Spirituality	President
Theological Diversity	Chaplains
Turnovers in Leadership	Charisma
Voluntary	Committees/Task Forces
Institutional Core Values	Faculty
Centrality of Scholarship	Experiential Orientation
Defending the Reputation	Resistance
Seeking Legitimacy	Formal Training in Spiritual Formation
Prime Importance	Local Pastors
Byproduct of Other Study	Moral Failure
Character Formation	Pastoral Orientation
Demise	Personal Spiritual Life
Disappointment	Power/Influence
Emotional Transformation	Student–Led
Idea without Follow–Through	Student Expectations
Lacking Direct Benefit	Communicating a Vision for Spiritual Formation
Co-curricular	Choosing a School
Community	Cultural Awareness
Conservative Origins	Denomination–Based Opportunities
Defending the Faith	Distinguishing the Spiritual from the Theological
Reformed Origins	Moral Integrity
Context of Revival	Philosophical
Curriculum	Practical
Assignments	Spiritual Formation Component
Comprehensive Degree Program	Student Suggestions
Coursework	
Electives	

After initial open coding, data was organized according to the following emerging categories, concepts and phenomena:

Building Relationships

- Forming Small Groups
  - Weekly Reflection Groups
- Socializing
  - Sharing a Meal
- Shepherding Students
  - Pastoral Orientation
  - Mentoring
  - Modeling
- Spiritual Care
- Promoting Psychological Safety

Teaching for Transformation

- Focusing on Praxis
- Reflecting on Theology
- Challenging Assumptions
- Sharing Passion
- Integrating Spiritual Disciplines

Creating Psychological Safety

- Accepting Individuals
- Valuing Individuals
- Demonstrating Humility

Mandating Spiritual Formation

- Assessing Outcomes
- Requiring Chapel Attendance
- Adopting Accreditation Standards
- Integration throughout Curriculum
- Weekly Reflection Groups
- Communicating a Vision for Spiritual Formation

Failing Institutional Efforts

- Checking the Box
- Based on Personalities
- Conflicting Priorities Between Departments
- Large Size / Institutional Growth
- Lacking Coherent Approach
  - Disconnection from Classes
- Lacking Intentionality
- Lacking Time and Energy
  - Faculty Overload
  - Student Overload

## APPENDIX 5

### SNAPP DISSERTATION OPEN CODING RESULTS

The following concepts and phenomena were created in the open coding process of the Snapp dissertation:<sup>1</sup>

"Being versus doing"	Feeling disrespected
"Experience versus learning"	Feeling judged
"Learning to relax"	Feeling overwhelmed
"Psychological dumping"	Feeling safe
"Responding to the relational"	Feeling valued
"Us versus them"	Finding value in the program
Adjustment by leadership	Hostility
Aligning with God's will	Journaling
Being authentic with God	Lacking balance
Being authentic with others	Learning self-care
Community service	Mandatory
Decreased temptation	Overcoming fear
Disappointment	Over-emphasizing the inward
Disciplining the self	Participating in small groups
Diverse backgrounds	Practicing silence
Doubting one's own spirituality	Practicing spiritual disciplines
Encountering God	Praying
Enlightening	Questioning leadership
Enriching one's spiritual life	Redefining of the self
Experiencing transformation	Relational challenges to formation
Fear	Reorientation
Fear of language	Sharing frustrations
Fearing the Unknown	Trusting God's leadership
Fearing theological influences	Trusting Scripture
Feeling accepted	Reading Scripture
Feeling connected	

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<sup>1</sup>Catherine Ann Snapp, "Spiritual Formation: A Case Study in a Seminary Environment" (Ph.D. diss., Baylor University, 2002).



After initial open coding, data was organized according to the following emerging categories, concepts and phenomena:

Experiencing Psychological Safety

- Feeling accepted
- Feeling connected
- Feeling secure
  - Trusting Scripture
  - Trusting God's leadership
- Feeling valued

Experiencing Transformation

- Being authentic with God
  - Encountering God
  - Aligning with God's will
- Being authentic with others
  - "Psychological dumping"
- Being authentic with self
  - Disciplining the self
  - Learning self-care
  - Redefining the self in relationship to God

Participating in Formation Component

- Practicing Spiritual Disciplines
  - Praying
  - Community service
  - Journaling
  - Reading Scripture
  - Practicing silence
- Participating in small groups
- Emphasizing the implicit with the explicit
  - "Being versus doing"
  - "Experiencing versus learning"

Inhibiting Transformation

- Fear
  - Fearing the unknown
  - Fearing theological influences
  - Fearing overemphasis on the inward
- Relational challenges to formation
  - Feeling disrespected
  - Feeling judged
  - "Us versus them"
- Feeling overwhelmed

## APPENDIX 6

### NUNEZ DISSERTATION OPEN CODING RESULTS

The following concepts and phenomena were created in the open coding process of the Nunez dissertation:<sup>1</sup>

"Getting chills and goose bumps"	Incongruent behavior
"Taking the godly approach"	Institutional culture
Affecting others' lives	Lacking authenticity
Application as evidence of formation	Lacking clarity in transformation process
Being accessible	Learning as formation
Being held accountable	Measuring spiritual formation
Being intentional	Meeting standards
Being noticed by the community	Mentoring
Being prideful	Mentoring others as source of formation
Building relationships	Participating in chapel
Changing perspective as formation	Participating in small groups
Digging into one's past	Pervading mission of formation
Distinguish head knowledge and heart knowledge	Providing opportunities
Facilitating change processes	Relying on behaviors
Faculty	Relying on Scripture for direction
Feeling accepted	Remaining on the surface
Feeling close to God	Seeking spiritual community
Feeling connected	Student leaders
Feeling safe	Studying Scripture
Feeling supported	
Feeling valued	
Focusing on application	
Focusing on theological knowledge	
Growing through trial	
Hearing and obeying God	
Helping each other grow spiritually	
Imitating others	

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<sup>1</sup>Aaron M. Nunez, "Students' Spiritual Formation at a Christian University: A Hermeneutic Phenomenological Study" (Ph.D., University of Phoenix, 2014).

After initial open coding, data was organized according to the following emerging categories, concepts and phenomena:

Building Relationships

- Being mentored
- Helping each other grow spiritually
- Being held accountable

Experiencing Psychological Safety

- Feeling accepted
- Feeling connected
- Feeling safe
- Feeling supported
- Feeling valued

Experiencing Transformation through Application

- Distinguishing head knowledge and heart knowledge
  - Hearing and obeying God
  - Relying on Scripture for direction
  - Trusting God's sovereignty
- Imitating others
- Living a congruent life through explicit motivation
  - Being intentional
- Growing through trials
- Learning as formation
  - Changing perspectives/paradigms
  - "Gaining God's Perspective"

Evidencing Transformation through Application

- Living a congruent life through implicit motive
- Affecting others' lives
  - Facilitating change processes
  - Being accessible
- Mentoring others as formation

## APPENDIX 7

### SHEARD DISSERTATION OPEN CODING RESULTS

The following concepts and phenomena were created in the open coding process of the Sheard dissertation:<sup>1</sup>

"All about application"	Improving ministry leadership
Affecting physical condition	Improving relational interactions
Becoming more patient	Increasing self-awareness
Being a conduit for the Spirit	Knowing by experience
Being authentic	Languaging spiritual formation
Being vulnerable	Leading others in formation
Changing attitudes	Learning new perspectives
Conflating formation and discipleship	Meditating on Scripture
Connecting to history/tradition	Mentoring
Connecting with God	Missing from the local church
Connecting with others	Practicing self-care
Continued practice post-graduation	Practicing spiritual disciplines
Diversity of backgrounds	Praying
Emotional transformation	Prioritizing relationship with God
Encouraging others	Reading Scripture
Enriching the experience	Reflecting on theology
Faculty	Relating to leaders
Feeling accepted	Reorienting image of self-before-God
Feeling centered/grounded	Sharing formation with others
Feeling confident	Spiritual formation component
Feeling safe	Feeling safe
Finding peace	
Focusing on God	
Focusing on self	
Head knowledge versus heart knowledge	
Helping others grow spiritually	
Imitating Christ	

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<sup>1</sup>Reed A. Sheard, "The Role of Spiritual Formation in the Development of Religious Leaders at George Fox Evangelical Seminary" (Ed.D. diss., Seattle University, 2004).

After initial open coding, data was organized according to the following emerging categories, concepts and phenomena:

Experiencing Psychological Safety

- Feeling accepted
- Feeling confident

Connecting

- Connecting with God
- Connecting with Others
  - Learning new perspectives
- Connecting to history/tradition

Experiencing Transformation

- Reflecting on theology
  - Head knowledge versus heart knowledge
  - Knowing by experience
- Focusing on Application
  - “All about application”
  - Imitating Christ
  - Practicing spiritual disciplines
    - Meditating on Scripture
    - Praying
    - Reading Scripture
    - Continued practice post-graduation

Evidencing Transformation

- Reorienting image of self-before-God
  - Prioritizing / focusing on God
- Increasing self-awareness
  - Practicing self-care
- Emotional transformation
  - Changing attitudes
  - Becoming more patient
  - Feeling confident
  - Feeling centered/grounded
  - Finding peace
- Improving relationships
  - Improving ministry leadership
  - Improving relational interactions

Leading Others in Transformation

- Being a conduit for the Spirit
- Being relatable
  - Being authentic
  - Being vulnerable
- Encouraging others
- Languaging spiritual formation
- Passing on disciplines

APPENDIX 8

INITIAL DATA INTEGRATION FOR OPEN CODING  
OF THE META-ANALYSIS

Table A3. Initial data integration for open coding of the meta-analysis

Categories, Concepts, and Phenomena	Rhodes	Snapp	Nunez	Sheard
Building Relationships	•	•	•	•
Forming Small Groups	•	•		
Weekly Reflection Groups	•			
Socializing	•			
Sharing a Meal	•			
Shepherding Students	•			
Pastoral Orientation	•			•
Mentoring / Being Mentored	•	•	•	•
Modeling / Imitating Others	•		•	•
Spiritual Care (merged with Helping Each Other Grow Spiritually)	•	•	•	
Accountability		•	•	
Teaching for Transformation (merged w/ Participating in Formation Component; Learning as Formation)	•	•	•	•
Emphasizing the implicit w/ explicit “Being versus doing”		•		
Focusing on Praxis (merged w/ Practicing/Integrating Spiritual Disciplines)	•	•		•
“Experiencing versus learning” (merged with Distinguishing Head Knowledge and Heart Knowledge)		•	•	•
Hearing and Obeying God			•	
Imitating Christ				•
Relying on Scripture for Direction			•	
Trusting God’s Sovereignty			•	
Community service		•		
Journaling		•		
Reading Scripture	•	•	•	•
Praying	•	•	•	•
Practicing silence	•	•		
Reflecting on Theology	•	•		•

Table A3 —continued

Categories, Concepts, and Phenomena	Rhodes	Snapp	Nunez	Sheard
Challenging Assumptions (merged with Changing Perspective/Paradigms)	•	•	•	•
“Gaining God’s Perspective”			•	
Sharing Passion	•			
Experiencing Transformation		•	•	•
Connecting with God (merged with Being Authentic with God, Encountering God)	•	•		•
Aligning with God’s will		•		
Connecting with Others (merged with Being Authentic with Others)		•		•
“Psychological dumping”		•		
Connecting to History/Tradition				•
Participating in Small Groups		•		
Being authentic with self (merged with Increasing Self-Awareness)		•		•
Disciplining the self		•		
Learning / Practicing self-care		•		•
Reorienting Image of Self-Before-God (merged with Redefining the self in relationship to God)		•		•
Growing through Trials			•	
Evidencing Transformation (merged with Evidencing...through Application)			•	•
Living a Congruent Life through Implicit Motive			•	
Affecting Others’ Lives			•	
Facilitating Change Processes			•	
Being Accessible			•	
Leading Others in Transformation				•
Being a conduit for the Spirit				•
Being relatable				•
Being authentic				•
Being vulnerable				•
Encouraging others				•
Languaging spiritual formation				•
Passing on disciplines				•
Mentoring Others as Formation			•	
Prioritizing / Focusing on God				•
Emotional transformation				•
Changing attitudes				•
Becoming more patient				•
Feeling confident				•
Feeling centered/grounded				•
Finding peace				•
Improving relationships				•

Table A3 —continued

Categories, Concepts, and Phenomena	Rhodes	Snapp	Nunez	Sheard
Improving ministry leadership				•
Improving relational interactions				•
Creating/Experiencing Psychological Safety	•	•	•	•
Accepting Individuals / Feeling Accepted	•	•	•	•
Valuing Individuals / Feeling Valued	•	•	•	
Demonstrating Humility	•			
Feeling Connected		•	•	
Feeling Secure (merged with Feeling Safe, Feeling Confident)		•	•	•
Trusting Scripture		•		
Trusting God’s Leadership		•		
Feeling Supported			•	
Mandating Spiritual Formation	•			
Assessing Outcomes	•			
Requiring Chapel Attendance	•			
Adopting Accreditation Standards	•			
Integration throughout Curriculum	•			
Weekly Reflection Groups	•			
Communicating a Formation Vision	•			
Failing Institutional Efforts	•			
Checking the Box	•			
Based on Personalities	•			
Conflicting Priorities	•			
Large Size / Institutional Growth	•			
Lacking Coherent Approach	•			
Disconnection from Classes	•			
Lacking Intentionality	•			
Lacking Time and Energy	•			
Faculty Overload	•			
Student Overload	•			
Inhibiting Transformation		•		
Fear		•		
Fearing the unknown		•		
Fearing theological influences		•		
Fearing overemphasis on the inward		•		
Relational challenges to formation		•		
Feeling disrespected		•		
Feeling judged		•		
“Us versus them”		•		
Feeling overwhelmed		•		



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## ABSTRACT

### AFFECTIVE SOCIAL NEUROBIOLOGY AND STUDENT FORMATION IN CHRISTIAN HIGHER EDUCATION INSTITUTIONS: A TRANSDISCIPLINARY MULTIMETHOD STUDY

Jacob Earl Porter, Ed.D.  
The Southern Baptist Theological Seminary, 2019  
Chair: Dr. John David Trentham

This multimethod study utilizes methods of grounded qualitative meta-analysis and transdisciplinary textual analysis to examine the extent to which the phenomenon of student spiritual formation at Christian higher education institutions reflects the growing body of literature on human development from the field of affective social neurobiology. The meta-analysis was based on four previously conducted qualitative studies of student spiritual formation at Christian higher education institutions. Each study was individually analyzed utilizing standard grounded theory processes of open, axial, and selective coding. The results of each were then combined for a grounded qualitative meta-analysis across the primary studies to produce hypotheses about the phenomenon of student spiritual formation derived from the data. These hypotheses were then read in light of affective social neurobiological research utilizing a transdisciplinary methodology. The thesis concludes with implications of the findings, application for those facilitating spiritual formation processes, and directions for future research.



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