Introduction
The Change of Fourteen Years

> There lies all the braine worke.
> – John Marston, *Parasitaster, or The Fawne* (1606)

When early moderns described their minds as changed, stuck, or drawn away, they were not just thinking metaphorically. They understood cognition as a material phenomenon. The external senses delivered perceptual impressions to the brain, where the animal spirits concocted there carried them through it to be shaped, judged, and stored. The principle mental faculties (imagination, understanding, and memory) were only as robust as the body in which that brain was embedded, and, together, they were all subject to the vagaries of an individual's temperament and the environmental factors that daily altered it. At the same time, the force of one's cognitive activities could trigger responses that extended beyond the porous brain, working with the heart and humors to produce passions within the body, but also affecting matter (human and otherwise) beyond the permeable envelope of the skin.[1] Thanks to the recent turn in early modern studies to theories of embodied cognition, we are now alert to these reciprocal conditions.[2] The editors of a foundational collection on the subject mark this critical shift with the "re-cognised" term *body-mind*, which captures "the embodied, enactive, dynamic, and distributed" quality of these activities.[3]

Early modern scholars from a range of sub-disciplines have embraced this model, combining it with their individual specialties to create dynamic theoretical networks in the past decade. The result has been an inspired outpouring of studies that have reimagined the body-mind's participation in everything from religious communities and theatrical spaces to ecological and posthuman phenomena.[4] But as scholars move forward in their discoveries of these rich, new cognitive worlds, they consistently leave one category behind: gender. Perhaps they are reluctant to apply potentially restrictive models to this novel interpretive paradigm, one in which

body-minds interact limitlessly with the world at large regardless of one's sex. This critical avoidance coincides with Valerie Traub's assessment that recent methods in early modern studies "exhibit only sporadic investments in gender." She connects this trend to a general sense in the humanities "of fatigue, particularly in reference to the keyword 'feminist': a feeling of 'been there, done that'."[5]

As a consequence, the early modern female brain has become yesterday's news. When critics do address it, they tend to rely on a familiar narrative about cognitive inferiority based in humoral theories passed down from ancient Greek, Latin, and medieval Arabic commentaries and sources.[6] According to these classical models and their adaptors, women failed to produce enough heat to keep their bodily fluids efficiently in motion. As a result, the cold female brain failed to concoct the same high-quality animal spirits as men's brains, a deficiency that left their mental processes relatively dysfunctional.[7]

Girls on the verge or in the midst of sexual maturation fare especially poorly when approached from this theoretical perspective. In her study of early modern puberty, Helen King argues that sixteenth-century English beliefs positioned menarche "as the key point of danger for women, a time when their bodies and their minds are equally in turmoil."[8] Turning to medical accounts, she traces representations of adolescent girls as victims of their bodies. Rather than *ripening*, the common term for healthy female maturation, they potentially retained their menstrual blood and seed (the female equivalent at that time of male sperm) to the point of putrefaction and greensickness. The latter was an alleged disease that early moderns revived from its classical sources and circulated in popular and medical texts alike. Heterosexual intercourse (preferably marital) would relieve both problems, as orgasm and an enlarged genital passageway would release a girl's excess seed and menstrual fluids, respectively. Without this sexual "cure," however, adolescent girls' body-minds potentially succumbed to chaos: the body's putrefied matter produced vapors that could, as one physician declared, "ascend unto the Brain, which disturb the Rational Faculty, and depose it from its throne."[9]

The brain of an unmarried adolescent girl would appear to be doubly endangered, then, yoked as it was to a body that was both humorally inferior *and* sexually mature, yet unrelieved of the excess blood and seed that only intercourse could release. This belief found fictional expression in characters like the delusional, lovesick Jailer's Daughter of William Shakespeare and John Fletcher's *The Two Noble Kinsmen*, a teenager who is seemingly cured of her hallucinations once she is tricked into

having sex – a particularly insidious example of the "pushes" she laments wenches are "driven to / When fifteen once has found us" (2.4.6–7).[10] The physician John Hall, Shakespeare's son-in-law, diagnosed the Bard's own fifteen-year-old granddaughter with a uterine pathology that was believed to strike adolescent girls in particular. Elizabeth had been suffering from convulsions of the mouth, but was cured (according to Hall's notes from January 5, 1624) after he administered pills and unguents to his daughter that brought on her menses: "[B]y this she had great advantage, her Courses being obstructed. . . . After the use of these, the former forme of her mouth and face was restored."[11] One can imagine how Elizabeth, with her distorted visage, looked the part of a madwoman before her father stepped in to restore her body-mind to its proper maidenly form.

Captivating as these stories of teenage pathology may be, they overshadow what this book illuminates: the many popular early modern depictions of adolescent girls' brainwork as agile and productive. *Brainwork* is not a term commonly used in cognitive theory, nor in early modern studies of embodied cognition. I use it here to emphasize the industrious quality of girls' mental processes, and to signal my attention to the *mind* part of the body-mind equation. This is a book that minds girls in a few ways. First and foremost, it remembers and attends to them; it also recognizes the value of their thinking *as a whole*. Early moderns understood a mind as both a general abstraction that denoted an individual's thoughts, inclinations, and desires and as a force that acted on matter. According to this latter understanding, a mind could "beat" upon an image (understood as an object inserted between the eye and the brain), "coin" a song, and even put on someone else's mind. When I use *mind*, it is to reference one or the other of these concepts, although they often conjoin in important ways – especially when girls' minds are bound or beaten down to size by the men who control them. I use the term *body-mind* when I want to emphasize the co-dependence of the mind and the body – the porous psychophysiognomies that animated early modern beliefs about how humans moved through and experienced their worlds. Finally, I use *brainwork* when analyzing depictions of girls' mental processes that signal specific cognitive effort, focus, and intention.

This sustained critical attention to girls' cognition is a necessary counterbalance to the enduring scholarly presumption that early moderns viewed all female psychophysiognomies as inferior and damage prone.[12] On the contrary, unlike their older, colder adult versions, girls' bodies appeared to burst with heat when they experienced the changes that culminated in menarche, a process that early moderns generally keyed to

age fourteen. This transformation also activated girls' principal mental faculties – imagination, understanding, and memory – in new, largely positive ways. Early modern writers often described the mutual work of these girls' faculties, and the transfer of thoughts and images between and beyond their brains' individual ventricles, where each of the faculties was generally believed to reside. Evidence of this dynamic cognitive movement animates depictions of female adolescence across all kinds of writings – not just medical texts, but philosophical treatises, parenting guides, prayers, poems, prose fiction, mythographies, histories, plays, and autobiographical accounts. By mining representations of this changing brainwork across a variety of genres, I identify a particular vocabulary that early moderns used to endow adolescent girls with cognitive abilities that were distinct to this stage of girlhood.

When the Catholic Englishwoman Mary Ward sat down in 1622 to write the story of her spiritual development, she remembered her teenage self directing her thoughts toward a state of determined mental constancy. In one especially memorable set of episodes, she describes her adolescent brain and body-mind working together to effect her transformation into a servant of God:

> When I was about 15 years old I had a religious vocation, which grace, by the mercy of God has been so continuous that not for one moment since then have I had the least thought of embracing a contrary state. . . . I practised much prayer, some few fasts, and some austerities and internal and external mortifications. . . . I delighted in reading spiritual books, . . . and I spent much time by day and sometimes by night in this employment. . . . I had during these years burning desires to be a martyr and my mind for a long time together fixed upon that happy event; the sufferings of the martyrs appeared to me delightful for attaining to so great a good, and my favourite thoughts were how? And when?[13]

Ward animates this anecdote from her girlhood by describing the interactive dynamics of brain, body-mind, and environment that scholars of embodied cognition have brought to our attention: she prays, fasts, reads day and night, and puts her body through a series of mortifications in order to fix her mind on the future martyrdom she imagines for herself. As Ward's autobiography demonstrates, this theoretical model is especially crucial for a study such as this, as it offers a way to see beyond the limited narrative of weak-minded female pathology that I am rethinking and revising. What could adolescent girls perceive, imagine, judge, invent, and remember as they moved through different environments and experiences? What made their minds expand or contract, beat upon images or

coin them? What were their brains imagined to hold and concoct if they were orphans as opposed to monitored daughters, or if they were raised in aristocratic as opposed to common households? In what ways were these girls free to use their brainwork? And why might early moderns have endowed them with these unique cognitive talents?

Theories of embodied cognition inform my questions, but I am also motivated by the work coming out of Girls' Studies, an interdisciplinary field that has grown exponentially over the past decade and that has emerged from both earlier feminist scholarship and, in the case of early modern cultural criticism, studies of childhood. The result has been a welcome recovery of early modern girls' writings and voices; innovative research into the word *girl* itself; and studies of girlhood as a performance of gender.[14] But we have yet to reckon with the story of sick, unhinged body-minds that continues to dominate studies of early modern females, and adolescent girls especially. In focusing on girls' minds and brainwork, I am neither trying to avoid the female body nor to essentialize it. Rather, I am using cognitive theory and early modern beliefs about adolescent body-minds to understand girls' brainwork as a physiological *and* cultural phenomenon. I begin with menarche, but I study how the mental gifts it allegedly bestowed on girls were jointly produced by the early moderns who witnessed, felt, and/or described it. My goal, then, is not to claim that the processes and effects of puberty and adolescence on the female brain are natural or universal, but to identify a stage of girlhood that begins with a biological change and to map out its particular early modern contours.

My argument has two interlocking premises. First, in post-Reformation England, when girls were expected to marry and turn their minds toward husbands, early moderns imagined the stretch of time between age fourteen and marriage as a stage of relative cognitive liberty. Second, these temporarily free and flexible adolescent minds, materially expressed through the newly agile and industrious brainwork brought on by the changes of puberty, seemed boundless in their new-enlivened capabilities. The girls that I analyze – real, fictional, pseudo-historical, and otherwise – harness the powers of their mental faculties in ways that early moderns depicted as unique and expansively engaged. They use their imaginations to see beyond restrictive social codes and envision their futures; with the faculty of understanding, they judge the people and ideas around them and manipulate existing forms to invent new arts and sciences; their memories store up their countries' and their families' histories, and bear witness to individual and communal traumas. Their brains are imagined to take in, assess, judge, and remember what others can't or won't.

Imagined is the key word here. Throughout this study, I am looking at depictions of girls' brainwork, minds, and body-minds that are deeply embedded in the fantasies, needs, and concerns of their creators. The early modern English writers and translators of the various genres I examine – and the depictions of adolescent cognition that they offer – were all participating at some level in the same dominant cultural debates and disruptions that were informing most early modern English people's experiences, from the everyday to the existential. Some of the most controversial changes, and the ones that are most relevant to my exploration here, include the seismic shifts in England's official religious orientation, and the alterations to daily spiritual practice and belief that these demanded; the increasingly heated, sometimes violent challenges to tyranny and to the God-given nature of kingship; new scientific methods and theories that reimagined the nature of matter, the production of knowledge, and man's place in the universe; debates in philosophical and theological thought about the actions and location of the soul, and the possible role of the imagination and memory in the construction and maintenance of ethical subjectivity; and the persistent anxiety (made more intense with the Protestant emphasis on marriage and procreation) over how to recognize the markers of virginity, chastity, pregnancy, and paternity – and how to wrestle them from the elusive operations of the sexually mature female body-mind.

My belief in the broad impact of these many changes on early modern people's lived experiences informs my methodological commitment to exploring non-literary depictions of adolescent girls in conjunction with literary ones. I am able to uncover a much more robust understanding of how early moderns imagined the adolescent female's cognitive processes and effects – and how these representations connected to particular quakes in England's shifting ideological landscapes – by reading different genres alongside one another, and attending to how they mutually resonate (and how and why they differ). In Chapter 3, for example, I argue that portrayals of daughters' inventive brainwork, which often builds on or surpasses their fathers' arts, dovetail with popular representations of innovation. The figure of Truth, the Daughter of Time, forms a connective tissue between a real physician's call for intellectual progress, the remaking of a pseudo-historical potter's daughter into the inventor of painting, and two Shakespearean girls whose brainwork echoes and amplifies these other daughters' connections to the production of new knowledges. In the same vein, my opening chapter puts depictions of the real fourteen-year-old Mary Glover's allegedly possessed body-mind in conversation with the

almost-fourteen-year-old Juliet Capulet's brainwork to introduce this book's foundational premise: that the changing brainwork of the early modern girl was a lightning rod for some of the period's most vital epistemological debates about the body and soul, faith and salvation, science and nature, God and the material universe – and the place and agency of human perception in the midst of it all.

Sexing the Adolescent Brain

The English mans treasure, a popular anatomy text first published in 1577, includes a typical early modern depiction of the brain's ventricles, faculties, and animating spirits. I quote at length here from the third edition of 1596:

> The substance of the Braine is divided into three partes, or ventrikles. . . . And from eache one to other bee issues or passages that are called Meates, through whome passeth the spirite of life to and fro. But here ye shall note that everie Ventrickle is divided into two partes. . . .: First in the foremost Ventrikle God hath founded and set the common Wittes, . . . as Hearing, Seeing, Feeling, Smelling, and tasting. And also there is in one parte of this Ventrikle, the vertue that is called Fantasie, and he taketh all the formes or ordinaunces that be disposed of the five Wittes, after the meaning of sensible things: In the other parte of the same Ventrikle is ordeined and founded the Imaginative vertue, the which receiveth of the common Wittes the fourme or shape of sensitive things, as they were received of the common Wittes. . . . In the middest Cell or Ventrikle there is founded and ordeyned the Cogitative or estimative vertue: for he rehearseth, sheweth, declareth, and deemeth those things that bee offered unto him by the other that were spoken of before. In the thirde Ventrikle and last, there is founded and ordeyned the vertue Memorative: in this place is registred and kept those things that are done and spoken with the senses, and keepeth them in his treasurie. . . .[15]

This description aligns with other popular vernacular representations of the brain, including an early sixteenth-century illustration from a general encyclopedia of knowledge by Gregor Reisch (Figure 0.1). That said, early modern medical texts were an amalgamation of often contradictory ideas from medieval Latin writings influenced by Arabic and Hebrew translations of and commentaries on Aristotle, Galen, and Hippocrates, among others. It was not uncommon for writers to include alternative views on the placement and precise function of each cognitive faculty, and the number of ventricles that housed them.[16] When it came to imagining cognition and displaying it for wider, popular consumption, however, the

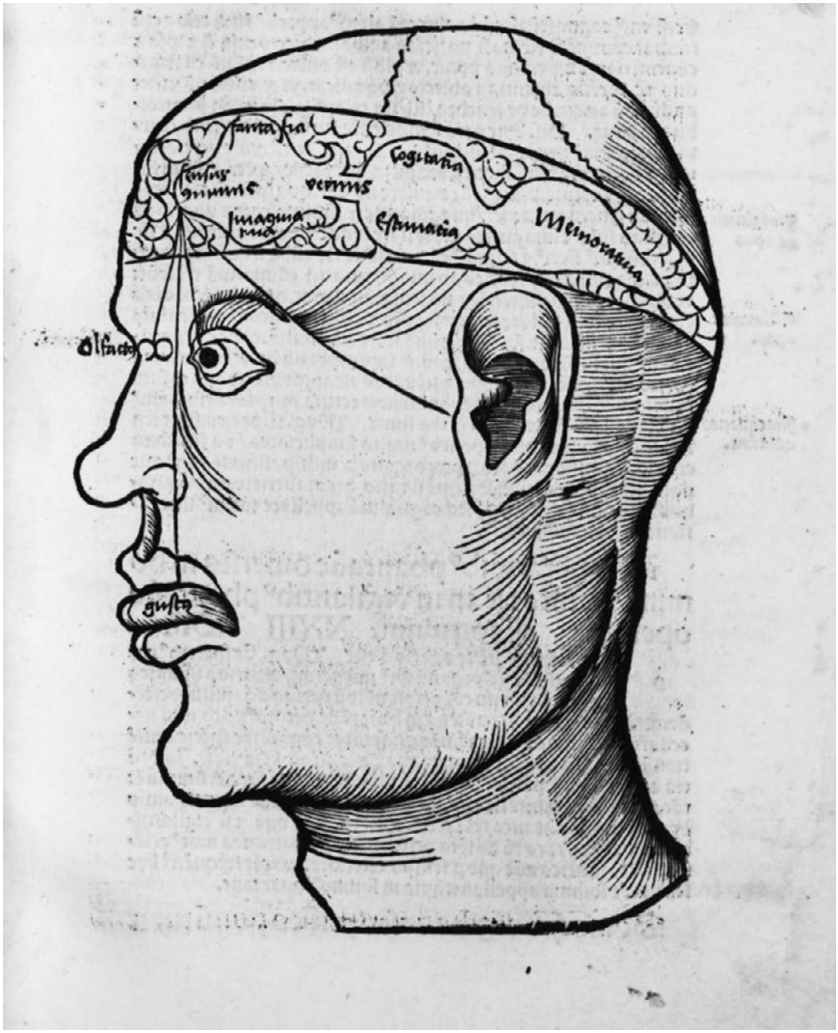

Figure 0.1 The cognitive faculties, from Gregor Reisch, *Margarita philosophica* (1508). Courtesy of HathiTrust

general mapping of the brain that we see in Reisch and the later *English mans treasure* remained largely unchanged until the mid-seventeenth century. Although Andreas Vesalius had dissected the human brain and called the ancient theory of ventricular division into question in his influential *De humani corporis fabrica* (1543), for example, he did not offer an alternative theory of cognition.

The English mans treasure was following popular precedent by dividing the brain into three areas, or ventricles, and in placing the principal mental faculties within them. The space of the front ventricle is the most crowded and confusing (a point I return to in Chapter 2): in it, the common wits (also known as the common sense) collect all of the material conveyed to the brain by the five external senses; these images and other sensory material are then passed on, either to the imaginative faculty (which temporarily stores them "as they were received") or to fantasy (also called "fancy" in the period), a faculty that could manipulate these forms into new shapes. Although there is a distinction here between the functions of imagination and fantasy/fancy, they often blur in early modern discourses – a fact that accounts for the interchangeable use of the terms themselves in the period (although *fancy* was more often associated with youthful imagination).[17] The second ventricle contains the "Cogitative or estimative" faculty, more commonly identified as understanding, and sometimes reason. Its role was to assess the dangers and benefits of the forms delivered to it from the imaginative faculty.[18] The "Memorative virtue," residing in the rear ventricle, then registered and stored those forms.

In this description, the cognitive faculties appear to work in an ordered, intentional way as they process the forms that the animal spirits carry into each of the brain's ventricles: they take, receive, rehearse, show, declare, deem, and keep them. Ideally, the brain's animal spirits move unimpeded "to and fro" through the meaty substance of this brain, facilitating these controlled cognitive processes as they appear here. But in practice (at least as early moderns conceived of it), this mental ecosystem rarely ran smoothly. Factors like diet, climate, sleep habits, and humoral complexion, or temperament, inevitably affected the quality and effectiveness of one's cognitive operations. In 1605, philosopher and statesman Francis Bacon outlined some of the many inherent and external factors that influenced the "severall Characters of Natures and dispositions":

> Of much like kinde are those impressions of Nature, which are imposed upon the Mind *by the Sex*, *by the Age*, *by the Region*, *by health, and sicknesse*, by *beauty* and *deformity*, and the like, which are inherent and not externe; and again, those which are caused by extern fortune: as *Soveraygnty, Nobility, obscure birth, ritches, want, Magistracye, privatenesse, prosperity, adversity, Constant fortune, variable fortune, rising per saltum*, *per gradus*, and the like.[19]

One might be able to move geographical regions, gain riches, and moderate some of the factors associated with health or sickness – and hence some of what Nature "imposed upon the Mind" – but sex and age in particular were beyond one's control.[20]

When it came to identifying the gender and age group that was least well equipped to manage these mutable psychophysiological processes and environmental effects, early modern writers of all kinds singled out adolescent boys, not girls. In his description of the seven ages of man, lawyer and poet William Vaughan figures age fourteen as an especially disruptive and illness-prone time for the young male body:

> In the fourteenth yeare proceedeth their strippling age. And betwixt that and the fifteenth yeare there falles out in the body a tumultuous whurly-burly or wambling commotion of humours, which in some breakes out into scabs or hote watry issues, in others into kindes of agues.[21]

The Dutch physician Levinus Lemnius adds mental disarray to this catalogue of commotions that, in the words of his English translator, rock "yonge Stryplinges aboute 14. or 15. yeares of age." His *Touchstone of complexions* describes this as a "slypperie and daungerous age," one that threatens the development of adolescent youths into well-ordered adult men: "Neyther are they incited to these immoderate pleasures through reason or any well stayed discretion, but by impotencie of mynde and wylfull affection, digressing and swarvyng from modestye, temperaunce and moderacion: the lack whereof googleth theyr unstayed heades." These googled heads and unstable body-minds, which might remain with a male into his twenties, were aggravated by "the boyling of theyr bloude wythin them," and signified "a shuttle waveryng nature, and a mynde subject to great mutability."[22]

Shakespeare's twins in *Twelfth Night* provide an exemplary case for investigating how age and gender conjoined to differentiate male and female adolescent cognition. Many of the play's comic turns hinge on how identical Viola is to her brother, Sebastian. Yet she is distinguished from him in two ways that bear directly on this book's argument. In the first case, Sebastian tells Antonio that, although his twin "much resembled" him, Viola "bore a mind that envy could not but call fair" (2.1.21, 24–25). Her mind is not just fair, however; it is actively focused from the start of the play on shaping her present situation and her future. When she washes up on the shores of Illyria, she hatches a plan to conceal herself as a eunuch and serve Count Orsino: "For such disguise," she hopes, "shall become / The form of my intent" (1.2.50–51). She enlists the Captain to help her, and tells him to "shape thou thy silence to my wit" (1.2.57). Viola uses the vocabulary of cognition to make her intent and wit the primary forces around which things (her disguise) and people (the Captain) will shape themselves. And she imagines that this distributive

brainwork will help her control the terms of her own developmental timeline: her intent is to not be "delivered to the world / Till I had made mine own occasion mellow," or ripe (1.2.38–39). Viola's twin, meanwhile, resembles the slippery and distracted adolescent boys that populated early modern writings on age. Sebastian leverages no such witty and intentional brainwork to help him determine the shape of his future: "My determinate voyage is mere extravagancy," or wandering, he tells his companion Antonio (2.1.9–10). This tendency toward aimless shuttling is confirmed when he finally gets to the city: rather than resting at the lodging Antonio has secured for him, and potentially moderating at least one of the non-naturals believed to affect the body-mind, he instead seeks to stay awake and "satisfy our eyes" with tourist attractions (3.3.22).

The second crucial way in which the twins are distinguished from each other is revealed in the final discovery scene, when each one singles out Viola's thirteenth birthday as the day their father died:

VIOLA: My father had a mole upon his brow.
SEBASTIAN: And so had mine.
VIOLA: And died that day when Viola from her birth
Had numbered thirteen years.
SEBASTIAN: O, that record is lively in my soul.[23]
He finishèd indeed his mortal act
That day that made my sister thirteen years. (5.1.235–41)

As twins, Viola and Sebastian are *by definition* born within the same limited time frame ("in an hour," according to Sebastian); nevertheless, each sibling only tags Viola as moving through the world of the play in her fourteenth year (2.1.16). Shakespeare departs from his sources here by keying Viola to this specific age, just as he does when he writes Juliet Capulet as a girl on the verge of fourteen years.[24] He and the many other playwrights who explicitly marked their teenage female characters in relation to this pubertal threshold, and spotlighted their unique cognitive abilities, clearly recognized this dynamic developmental stage and the female brainwork it heralded.

Marking Puberty

My Introduction takes its name from the play that features Juliet, one of the most enduringly famous early modern teenagers. Her father describes the process of female puberty as "the change of fourteen years," a phrase

that captures its temporal inevitability and transformative effects (*Romeo and Juliet* 1.2.9).[25] It was unusual to mark the timing of a transitional stage in the human life cycle so consistently and precisely. In order to appreciate the change of fourteen years' unique place in early modern thought, then, it is useful to take a closer look at typical demarcations of the ages of man. Early moderns had a wealth of texts and theories to draw upon when imagining the stages of human development, although they overwhelmingly centered on males. Writers typically were not consistent in the ages and terminology they used to mark these stretches of time, but they did tend to divide male puberty and adolescence into a series of age-bound periods – and, as we have seen, they often recognized the dangers of the fourteenth year to the male body-mind.[26] Lemnius delineates three discrete stages between these developmental bookends in his *Touchstone of complexions*: "Pubertie . . . taketh his ende at the age of xviii. yeares," and was followed by "wylfull and slypperye Adolescencie which endeth at xxv. yeares." The next stage he defines as "Youth or flourishing Age, wherein the body and mynde be in their chiefeste prime and jolitye," one that "lasteth till a man bee xxxv. yeares olde." In his *Approved directions for health*, however, Vaughan does not label a period of time as male puberty, although he does describe the third age of man as "the strippling age" that follows upon childhood and lasts eight years: "It beginneth at the fourteenth yeare, and continueth untill the end of the two and twentieth."[27] Other writers used Pythagoras's four-part division of man's ages into childhood, youth, manhood, and old age. Henry Cuff, for example, places puberty in the last phase of the childhood stage and describes it as a "*budding* and *blossoming* age" that extended from age eight or nine "until the eighteenth yeere." After this came youth, which lasted from eighteen "until we be five and twentie."[28]

The ideological leanings of individual authors and the intended audiences for their texts undoubtedly account for the varying parameters of this stage between childhood and adulthood. Schoolmaster Richard Mulcaster defines it as stretching between ages seven and twenty in his argument for the training up of children; this makes sense, given that he is primarily focusing on the secular education of male youths, a process that formally began around age seven.[29] The anonymous author of *The office of Christian parents*, however, delineates a period "from fourteene till twenty eight, or till the child is married," during which time parents must "perfect the formall bringing up of their children." Although the author initially does not distinguish between fourteen-year-old sons and daughters, he soon recalibrates the point of entry into this stage for girls to age twelve. Since

the text's primary concern is to teach Christian parents how to raise future Christian husbands and wives, this distinction is not surprising. Fourteen was the age of consent for boys, and twelve for girls, which would account for how the author differently demarcates the starting points for their education as future householders: "a maide at twelve, and a boy at fourteene, enter into that age, wherein body and minde are prepared and preparing to that state of life wherein they themselves may be governours of others." Note that the author recognizes both the "body and minde" of these adolescents, and considers them co-equal factors in the proper formation of an adult. That said, boys and girls are not equal when it comes to the "others" they eventually will govern and the preparation required to do so: "If from twelve til the day of marriage she be taught to use the needle exquisitely, and to doe and understand all points of huswifery rightly and perfectly; and therewithall doe grow in custome to read, to heare, to love and delight in the wisedome of Gods word faithfully, she may be brought into her husbands house, with . . . great honour and joy."[30]

Clearly, developmental stages were as much the product of social conventions (themselves varied) as they were of biological change, which accounts for the lack of numerological consistency in definitions of early modern adolescence. But when it came to marking female development, early modern writers were generally in agreement about the timing of one pivotal moment: menarche. In 1583, physician Philip Barrough wrote that "in many the floures beginne to flowe the fourtenth yeare, and in very fewe before the thirtenth or twelfth yeare. And to most women they burst out after the fourtenth yeare."[31] When the physician Helkiah Crooke compiled his influential medical text, *Mikrokosmographia* (first published in 1615), he echoed and expanded on this description:

> Now at the second seaven yeares the heate begins to gather strength, to burst foorth as the Sunne in his brightnes, and to rule in the Horizon of the body; from which heate doe proceede as necessary consequencies, the largenes of the wayes and vesselles, the motions and commotions of the humours, their subtilty or thinnesse, and finally the strength of the expelling faculty.[32]

Crooke does not connect this process to the cold and changeable moon (a common trope at the time for describing female mutability), but rather to the sun in his brightness. The heat "gather[s] strength," "rules," and finally produces the "strength of the expelling faulty." The expansion of the vessels, movements of the humors, and first menstrual flow are all "necessary consequencies" of this increased heat. All in all, Crooke presents this thermal transformation as orderly and entirely non-pathological.

This depiction of female pubertal change offers a significant exception to the gendered rules of early modern humoral theory in which the female body-mind wallows in its cold and wet inadequacies. Gail Kern Paster's influential work on gender and the humors has brought this view of early modern women to the forefront of early modern studies and embodied experience. In her analysis of this same medical text (although not this same passage), she argues that Crooke figures female heat as subversive, a condition that must be contained or pathologized to support gendered hierarchies that privileged men:

> Crooke works hard to contain the ontological possibility of female heat, because to accept a high degree of normative variation in female heat would produce differences of temperament between one woman and another and would thus threaten the axiomatic differences of temperament that secured the hierarchical relation between all women and all men.[33]

Paster connects this generally colder female body to early modern views of the female brain as dull in comparison to the male's: men, "being hotter than most women, were thought to have better perceptual and cognitive apparatuses – better hardware and software – and were able to report more rationally and reliably about the world."[34] Her theory finds ample support in medical texts of the time. In one such representative passage, Lemnius claims: "Heate whych is the thing that pricketh forward & emboldeneth to take in hand worthy attempts, is in [women] very weake and small: for this cause, are men quicker witted, deeper searchers out of matters, and more diligente and rype of judgemente then women."[35]

But when it comes to understanding the early modern pubescent female, this account of cold, weak-minded femininity is inadequate. It certainly does not accommodate Crooke's depiction of menarche and the brightly ordered heat responsible for its onset. Instead, this popular medical text suggests that a thermally transformed pubescent girl might be able to concoct what her older, colder female self could not: brisk spirits that enlivened, first, the blood and eventually the mental faculties through a series of well-ordered transformations. Ideally, the natural spirits (subtle vapors concocted by the humors in the liver and present in the blood) were carried to the heart, where they received air and became vital spirits. From there, they moved to the brain where they were refined into the highest form of animal spirits that powered images and ideas through the brain. In other words, optimal mental activity was a full-bodied affair – one that required adequate heat to keep the spirits moving, and also a well-ordered temperament in which heat (to recall Crooke's image) is able to "rule in the Horizon of the body" and produce "necessary consequencies."

Victoria Sparey's work on puberty is a welcome intervention into the binaristic humoral logic that she argues has been "too sweepingly applied in terms of gender (hot/masculine, cold/feminine)." As she notes, adolescence was marked "by a gradual increase in generative heat in both sexes that was crucial in signifying the individual's progression to adulthood." By insisting on a humoral binary, we "miss nuances in understanding this particular stage of life."[36] One especially important nuance emerges when Crooke continues with his depiction of puberty's effects on both male and female cognition. After he describes the heat of the female body gathering strength and bursting like the sun at age fourteen, he continues:

> At that time men begin to grow hayrie, to have lustfull imaginations and to change their voyce; womens Pappes begin to swell and they to thinke uppon husbands.[37]

Imagination, in close contact with the common wits that consolidated all sensory input, was considered the most impressionable and fragile of the mental faculties, the first one to go when the brain was compromised by negative internal or environmental factors. And here Crooke singles out the *male* imagination, not the female, for its vulnerability. The young men he describes (like the youths who suffer from an "impotencie of mynde" in *The touchstone of complexions*) do not control this newly stimulated faculty; rather, they appear to have it thrust upon them. Fourteen-year-old females, on the other hand, begin "to thinke uppon husbands," a cognitive act that suggests intention and direction – in other words, brainwork. The change of fourteen years has activated more than just her imagination, for to *think upon* something also requires contemplation and evaluation, functions of the rational faculty. Lemnius had claimed that men's superior heat made them "quicker witted, deeper searchers out of matters and more diligente and rype of judgemente" than women. But, as a group, these newly heated teenage girls who think upon husbands seem to have escaped the confines of this particular gendered cognitive binary.

Shakespeare's Rosalind suggests as much when she play-acts taking Orlando for her husband in *As You Like It*. Having enlisted Celia to play the priest and marry them, she explains that "a girl goes before the priest; and certainly a woman's thought runs before her actions" (4.1.118–19). Rosalind's image of quick female cognition captures the dynamic brainwork of the adolescent girl. It can power her mind to run playfully toward thoughts of marriage (and move her girl's body to go before a priest), but

this agile cognitive experiment with adulthood does not require her to become a woman/wife in action. From where would a girl like Rosalind or Crooke's heated fourteen-year-old girl get such woman's thoughts of husbands? From her external senses, of course, which would have perceived men and carried their traces into her common sense at the front of the brain to be collected. But also, perhaps, from her fantasy/imagination, which could concoct them from nothing as well as retain images impressed upon it. Even, perhaps, from her memory, which stored the forms of both imagined and actual men in its treasury. But regardless of where these images originated, *thinking upon husbands* requires a degree of mental control – an ability to use her brainwork to see her way past immediate carnal pleasures and not, like Crooke's young men, let a lustful imagination wrest control of her body-mind.

The seventeenth-century writer William Greenwood describes "the *vehemency* of *Adolescency*" as lasting "betwixt the age of 14 and 28" for males and females. He warns that this vehemence "beginneth to tickle them and when they have greatest need of a bridle, then they let loose the raines, committing themselves to the subjection of this *passion*."[38] But Crooke's fourteen-year-old females, like many of the girls I analyze here, do not embody this idea of mindless, raging adolescence. In the language of cognitive brain theory, they are capable of prospection – of projecting themselves into imagined future situations. And once this ability is activated, they can direct their thoughts in multiple ways toward multiple ends (including multiple husbands) – and, given Greenwood's parameters, for multiple years.

It is critical to understand that these distinctions between male and female cognitive change are not in the original Aristotelian description from which Crooke and his predecessors were working. In Book VII of the *Historia animalium* (*HA*), Aristotle begins with the boys: "The male first begins to produce seed, as a rule, on the completion of twice seven years. At the same time the growth of the pubic hair begins," and "the voice begins to change, becoming rougher and more uneven, no longer high-pitched but not yet deep, nor all of one pitch, but sounding like ill-strung and rough lyre strings: what they call 'goat voice.'" These changes are accompanied by "a swelling up of breasts and genitalia." Then he turns to the girls: "At about the same time in the females too there develops the swelling up of the breasts, and the flow of the so-called menses is released." With the exception of the menses, the kinds of physical changes boys and girls undergo (as Aristotle describes them) are quite comparable. Fourteen-year-old males and females develop swollen breasts, and "[t]he voice too

changes in girls about this time to the deeper." They also experience similar sexual longings and libidinous mental fixations:

> They are in most need of guarding too about this time; for their impulse towards sexual activities is strongest when they begin. . . . For the females who are sexually active while quite young become more intemperate, and so do the males if they are unguarded. . . . For the channels become dilated and make an easy passage for fluids in this part of the body; and at the same time their old memory of the accompanying pleasure creates desire for the intercourse that then took place.[39]

Aristotle notes that both males and females need to be guarded from participating in sexual intercourse too soon, and he does not distinguish between them when identifying the role of their cognitive processes in sustaining lustful impulses. Males and females who have experienced the change of fourteen years and who have been sexually active are equally prone to remember pleasure and to desire it once again.

By the late sixteenth century, this Aristotelian account was circulating relatively unchanged in a number of Latin medical texts across Europe. The French physician André Du Laurens (also known as Laurentius) echoed many of *HA*'s phrases and included some of its Greek in his popular *Historia anatomica*, and he maintained the same gender equity when it came to describing pubertal lust: "At the second seven years . . . males begin to grow goatish, to know Venus, and to utter a rougher voice. For girls, the breasts begin to swell, the body is titillated by lust, and the genitals are sprinkled with new down."[40] Crooke identifies Laurentius as the primary source for Book Five of his *Mikrokosmographia* in which he describes puberty.[41] But while he closely follows Laurentius's description of boys' changing voices and girls' swelling paps, Crooke makes some notable changes in his Englished version. First, he excludes any mention of female bodies feeling titillated (not surprising, given the potential professional hazards of publishing immodest details about the body for English readers). Second, and most important for my argument here, he introduces a new cognitive vocabulary to this classical depiction and, in so doing, significantly differentiates the mental operations of fourteen-year-old males from those of females: he materializes Laurentius's idiomatic expression for male lust by translating boys' knowledge of Venus [*Venerem agnoscere*] into "lustfull imaginations"; and, while he edits out girls' lustful bodies, he adds that they "thinke uppon husbands."

Crooke's decision to swap out knowledge for imagination in the young male brain gestures toward the influence of medieval Arabic commentaries and sexual hygiene texts on European medical thought. These writings

transmitted the belief that imagination was a necessary factor for arousing the body and maintaining healthy male *and* female sexual functions.[42] In an earlier section, Crooke acknowledges its use in procreation, but also disparages men's abuse of their "lustfull . . . imaginations," comparing masturbation to vomiting.[43] By gendering and pathologizing this particular strand of medical belief, and incorporating it into Laurentius's essentially faithful rendering of Aristotle here, I believe Crooke reveals a specifically early modern English belief about pubertal change and the sexing of the adolescent brain: while fourteen-year-old boys become absorbed by their lustful imaginations, girls start using their brains to contemplate the future.[44]

A Mind "bound in the cave of care"

These accounts of the change of fourteen years – a dynamic transition that activated girls' brainwork even as their maturing body-minds remained unattached to a husband – offer a rich opportunity for us to rethink how early moderns were imagining the stage of female adolescence. Depending on a girl's social class, the time between thinking of husbands and having one might be a matter of a year, or more than a decade, with the latter being far more common. Historian Amy Froide conservatively estimates that 20 percent of Englishwomen, in fact, never married at all.[45] In her foundational study of early modern adolescence, Ilana Krausman Ben-Amos investigates female apprenticeships and domestic service, which took most girls away from their families for long periods of time and delayed their marriages. She argues that "these factors, while still placing some limits on young women in comparison with their male counterparts, left considerable scope for independence and initiative during their adolescent and youthful years."[46] Ben-Amos's findings complement Helen King's identification of a "puberty gap" that developed in sixteenth-century England, as male and female youths typically waited until their mid- to late-twenties to wed.[47] Ben-Amos turns briefly to examples from popular literature that show the variety of "sharp, witty and vigorous" youths (including females) who appear there, and who "must have reflected widespread views of young age."[48] And yet studies like hers seem to have barely impacted how early modern scholars (literary and otherwise) think about female brainwork during this developmental stage.

The girls that I focus on in this study are sexually mature, but unmarried. Their minds are not yet "bound in the cave of care," a phrase that Mamillia, the eponymous virgin heroine of Robert Greene's 1583 prose romance, uses to describe the cognitive fate of married women:

> [N]ot onely the common people, but also the most learned hath thought maryage to be such a restraint of libertie, as it feeleth no sparke of freedome: for both the body is given as a slave unto the will of an other man, and the minde is subjecte to sorow and bound in the cave of care: so that even the name of a wife importes a thousand troubles.[49]

Mamillia imagines marriage, regardless of one's social class, as a conjoined enslavement of the female body and mind, although they are depicted here as separate components subject to separate kinds of restraint. A wife's body must submit to the "will" of another man, a euphemism perhaps for sexual penetration, and certainly an acknowledgment of her physical vulnerability to whatever suffering her husband wishes to inflict on her. But Mamillia's description of the mind's loss of liberty – her use of the cave metaphor to figure a wife's cognitive binding – makes it seem equally painful and materially constrictive as her bodily enslavement. As such, Greene's girl articulates what is at stake in my recovery of an unbound, lively adolescent brain and body-mind.

When *The Taming of the Shrew*'s chastened wife Kate addresses the outspoken, newlywed women at the end of Shakespeare's play, she tells them: "My mind hath been as big as one of yours" (5.2.174). In gesturing toward her shrunken mind, Kate brings to life the everyday effects of embodied cognition for her audiences. The shrewish new bride who earlier had told her husband, Petruccio, "I am no child, no babe. / Your betters have endured me say my mind, / And if you cannot, best you stop your ears," gives her final speech after she has experienced his physical and mental abuse (4.3.74–76). Unable to speak her mind, Kate now experiences it as beaten down to size – bound in a sorrowful cave of care.

My study focuses on girls who have not yet experienced Kate's fate. I use the term *girl* here to define a specific group of females who were sexually mature but not yet bound to a husband. They are neither female children nor "women" (according to its normative, marriage-oriented sense in Protestant England), positions that generally limited the perceived scope and quality of a female's cognitive activities. Children were seen to have less fully developed mental faculties: as twenty-year-old Mamillia tells her Nurse, "in my tender age my infancie was not able to receive your counsell," but "nowe in my rype yeeres . . . I can conceive your meaning."[50] Wives' cognition was hampered in other ways, as they were expected to limit the scope of their mental activities to the fulfillment of domestic responsibilities and relations. In her study of early modern girlhood, Jennifer Higginbotham traces the development of the word *girl* during the period into a term that was defined in opposition to *woman*:

"Unlike 'maid,' with its connotations of virginity and service, 'girl' was available to designate female youth without always specifying sexual status or societal function." In this sense, the girls I identify as the subjects of my study align with what Higginbotham describes as a "reorienting" of the female maturation process.[51] These girls are not focused on and absorbed by the needs of a marital household, nor are they subject to their husband's wills. As such, their minds are free to move in ways that those of their married counterparts are not.[52] As Moll Cutpurse, the eponymous "roaring girl" (and avowedly unmarried free spirit) of Thomas Middleton and Thomas Dekker's comedy, asserts: "she that has wit and spirit / May scorn to live beholding to her body for meat, / Or for apparel . . . / Base is that mind that kneels unto her body / As if a husband stood in awe on's wife" (3.1.133–38, passim).[53] A married woman, according to Moll, must debase her mind in exchange for physical comforts like food and clothing; and her husband will not honor her in return for such subservience. This is a dependence that Petruccio exploits to the extreme when he starves Kate and denies her fresh clothes until she says what he wants to hear.

Moll's concerns seem justified when we turn to guides like *The Mirrhor of Modestie*, an instructional handbook for mothers on how to raise daughters. Its author, Thomas Salter, places explicit limits on what wives' minds should take in, and how they should be directed: "[E]very woman ought wholelie to be active and diligent about the governement of her housholde and familie, and touchyng recreation by learning that cannot bee graunted her, without greate daunger and offence to the beautie and brightnesse of her mynde."[54] A married woman's mind is an object to be admired for its unlearned beauty; "active" work should be reserved for governing one's household, not for educational endeavors.

I am not claiming, of course, that all unmarried girls moved through the world free of mental cares. Many were restricted by familial household demands, and many others across classes were working outside their homes, where they were expected to focus on the physical and mental demands of their masters, mistresses, and other employers – demands that could include abusive behaviors, sexual and otherwise. These environments and acts obviously had real negative effects on the body-minds of early modern adolescent girls. And some girls, depending on their families' resources and status, were more protected than others.

At the same time, girls were valued for the assets they brought to a marriage, which meant that the stakes and effects of their brainwork sometimes shifted with their social and economic position. In some respects, the mind of an elite girl was more policed than that of a girl with

fewer resources attached to her since the parents and guardians of the former had more at stake in protecting her from anything that might damage her chaste thoughts and/or body and devalue her on the marriage market. And yet the lower her status, the less virtuous (though ostensibly freer) a girl's cognitive activities might appear, depending on who was judging them. The virgin servant Diaphanta from Thomas Middleton and William Rowley's *The Changeling* is a case in point. When her noble mistress, Beatrice, offers her money to stand in for her on her wedding night (and, in so doing, help Beatrice hide her lack of virginity from her new husband), Diaphanta eagerly accepts: "I've a good mind, in troth, to earn your money" (4.1.93).[55] Her virginity – unlike Beatrice's – has no value to a future husband, because it has no goods attached to it; her mind can choose money over maidenhead, which will earn her the marriage portion she lacks. This image of free-range cognition soon changes, however, into one of low-class, mental sloppiness once Beatrice decides that her servant has forgotten her place. Diaphanta overstays her allotted time with her mistress's bridegroom and "never minds my honour or my peace," Beatrice fumes. Her greedy servant (according to her mistress) minds nothing but her own carnal pleasure, and "cannot rule her blood" (5.1.4, 7). Beatrice ensures that Diaphanta, "this whore," will be killed for the crime of turning her body-mind toward its own desires and forgetting those of her superior (5.1.23).

Depictions of female cognition obviously were impacted by dominant ideas about class, race, ethnicity, religion, and other categories that worked with gender to determine the degree of one's oppression. Brainwork and early modern girlhood must be understood through this intersectional lens, as the destruction of Diaphanta's body-mind – by order of her elite mistress – briefly demonstrates. A character like Abigail in Christopher Marlowe's *The Jew of Malta* suffers under a different set of discriminatory restrictions; thus, we must consider her identity as a Jew in conjunction with her identity as a thinking and changing fourteen-year-old girl. After feigning conversion to Catholicism and briefly entering a nunnery to aid her father's deceptive plot, she later seeks to break from his sinful ways and to be genuinely "metamorphosed to a nun" (1.2.392). (These are the words her despairing suitor uses to describe her.) She assures the doubting Friar, who previously had admitted her to the convent, that when she had done so the first time, "[t]hen were my thoughts so frail and unconfirmed." But, in the antisemitic culture of both Marlowe's Malta and late sixteenth-century England, no amount of mental redirection and fortitude can erase the specter of the girl's double conversion. The Friar will

admonish her to "see thou change no more," and her cruel Jewish father will ensure it by killing her (3.3.59, 71).[56]

Staging Brainwork

It is challenging to study a phenomenon like cognition that is not available to the naked eye. One way to do so, as I have begun to demonstrate here, is by uncovering the language and images that early moderns produced when they attempted to make manifest the invisible operations of the brain, mind, and body-mind. How did writers and illustrators depict the cognitive faculties that absorbed and processed sensory impressions before transforming them into phantasms, ideas, and inventions? Or the animal spirits that moved those metamorphic impressions through the brain's ventricles and beyond the skull to the heart and soul, and to spiritual realms? How did they imagine cognition's connection to the physical environment, the cosmos, and God?

Plays are an especially vibrant form through which to explore these largely invisible acts of cognition, which is why most of this study's literary examples are drawn from dramatic texts that would have been produced on some kind of early modern stage. As a genre, drama invites spectacle and spectatorship. Its girl characters not only describe their sensory experiences, affections, and thought processes, they *show* how their body-minds are influenced by their brainwork, and vice versa. They may even let an audience in on things that they hide from other characters. Although she ends the play as a morbid spectacle, for example, Juliet spends the bulk of it telling the audience what is happening inside her head. We are privy to moments that she must act alone (like the drinking of the Friar's death-sleep potion), and so we gain privileged access to the cognitive processes she claims to be feeling and directing.

These theatrical exchanges between girls' body-minds and their viewers, girl speakers and their audiences, also expose the fault lines in dominant early modern belief systems about gender, and specifically gendered kinds of behavior, desires, and cognition. Many of the girls I focus on here aggravate these tensions between allegedly visible signs of a female's thoughts and actions, and the invisible histories and cognitive operations that muddy or deconstruct them. Plays are ideal vehicles for producing scenarios that encourage the uncoupling of these "natural" gendered signs from sexed bodies. Girl characters are uniquely able to expose the instability of blushing, for example, as a reliable, visible indicator of female chastity, a topic I explore in Chapter 5. The cross-dressed heroines of John

Lyly's *Gallathea*, as we will see, engage in many such deconstructive acts, having (in one of the girls' words) "put on the mind" as well as the habit of a boy. This assertion of cognitive play emblematizes the kind of experimental, free-range brainwork in which I argue girls were imagined to be engaged.

When John Marston addressed the readers of his play *Parasitaster* in 1606, he asserted that "Comedies are writ to be spoken, not read: remember the life of these things consists in action."[57] And, true to his word, the satire that follows finds its fullest comic expression in the tricky brainwork of a fifteen-year-old girl, Princess Dulcimel. She woos the reluctant Prince Tiberio and engineers their marriage by sending him messages through her unwitting father, Duke Gonzago. To her father, she feigns chaste indifference, lying to him about Tiberio's heated pursuit of her, all the while knowing that her father will then confront him (and so reveal to Tiberio that *she* in fact is pursuing *him*). She boasts to her companion, Philocalia, that she will "stalk on the blind side of my all-knowing father's wit," an image that vividly captures the agile brainwork of the adolescent girl: "[H]e shall carry my favours, he shall amplify my affection, nay, he shall direct the prince the means, the very way to my bed" (3.259, 262–64). The latter unfolds in a spectacularly ironic way that turns Dulcimel's cognitive metaphor of stalking on the blind side of Gonzago's wit into the very real stuff of comedy: the audience watches Tiberio fulfill the instructions Dulcimel has sent him (again through her father) while simultaneously hearing Gonzago announce that he has expelled the Prince from his court at the start of act 5: the opening stage directions read, *Whilst the act is a-playing,* HERCULES *and* TIBERIO *enter*; TIBERIO *climbs the tree, and is received above by* DULCIMEL, PHILOCALIA, *and a* PRIEST.

When I happened for the first and only time upon an early modern use of the term *brainwork*, it was through the voice of this fifteen-year-old girl character. I was surprised (and, of course, delighted) to have found it, for I had assumed that the compound noun I had been using while writing this book did not exist in the early modern period. After all, it isn't even commonly used today. As Dulcimel hatches her plan to trick her father and woo Tiberio, Philocalia asks her what means she will use. Dulcimel replies: "there lies all the braine worke."[58] As far as I can determine, Marston is the first English writer to publish this term. The fact that he connects it to the "quick, deviceful, strong-brained Dulcimel, . . . too full of wit to be a wife," as Tiberio describes her, confirms the unique connection between brainwork and the unmarried early modern girl that inspires and drives my study (3.460–61).[59] It is important to note here

that Dulcimel is entirely justified in tricking her father, given the moral universe Marston creates: Gonzago is pressuring her to marry a man more than four times her age, a match that would violate the principle of proportion that structures the play. As Dulcimel exclaims to her companion: "[T]ell me if it be not a scandal to the soul of all being, proportion, that I, a female of fifteen, of a lightsome and civil discretion, healthy, lusty, vigorous, full, and idle, should forever be shackled to the crampy shins of a wayward, dull, sour, austere, rough, rheumy, threescore and four" (3.189–94). Who could blame her for using her brainwork to avoid shackling her healthy fifteen-year-old body-mind to such a husband? Marston clearly didn't.

In many early modern plays, parents typically are the ones who (mis) diagnose their daughters as greensick, while the girls themselves (stalking on the blind side of their parents' wits) demonstrate the fault lines in these interpretive strategies. The audience knows that the secretly wedded and bedded Juliet is not the "green-sickness carrion" her father believes her to be, for example (3.5.156). And in the same scene where Dulcimel reveals her brainwork to Philocalia, she suggests that the association between girlhood and pathology is essentially performative: "Shall I speak like a creature of a good healthful blood, and not like one of these weak, green sickness, lean, phthisic starvelings?" (3.224–26). And yet most studies tend to presume that early moderns predominantly understood girls' body-minds as authentically unstable when they crossed the pubertal threshold.

Ursula Potter argues that playwrights flagged the specific ages of their teenage characters as a way to cue their audiences to "the risky sexual behaviors commonly associated with the virginal body at puberty," and "to pander to a public fascination with contemporary medicine and the mysteries of the womb."[60] Although the teenagers Potter identifies are primarily connected to sexually suspect storylines, these girls and others like them tend to appear in satirical or sensationalist tales that depend upon easily recognized stereotypes. At the start of Ben Jonson's play *The Magnetic Lady*, for example, Placentia "strikes the fire of full fourteene, to day," and so is declared "[r]ipe for a husband" (1.2.4–5).[61] The joke on everyone, including her guardians, is that she has already used her ripe teenage body to get pregnant. Robert Burton uses this sexually active fourteen-year-old in a similarly one-note way, undoubtedly to hold his readers' attention as they made their way through his 800-plus-page *Anatomy of melancholy*: "Generally women begin *Pubescere* as they call it, at 14 yeeres old, and then they begin to offer themselves, and some to rage." He cites Leo Africanus, a converted Moor whose Arabic and Italian

travel writings were widely translated in the sixteenth century, to launch these raging girls further into the realm of exotic erotica: "in Africke a man shall scarce finde a maide at 14 yeeres old, they are so forward, and many amongst us after they come into the teenes, doe not live but linger."[62] Here is a blatant example of intersectional inequality: playing to a common racist stereotype, Burton foregrounds the precociously overheated temperaments of African girls who can't wait until fourteen to give their bodies away (although his syntax makes the "lingering" teenage English girls "amongst us" seem dangerously indistinct from these dark, foreign non-virgins).

Writers did not summon up mature teenage girls' bodies solely to produce humor and entertainment, of course. References to them also signaled serious concerns about adolescent female sexuality – concerns that help explain things like the cruel gamble made by the otherwise kind-hearted Antigonus in *The Winter's Tale*. In an attempt to convince jealous King Leontes that his wife, Queen Hermione, has not in fact cheated on him, Antigonus promises to mutilate his own three prepubescent daughters, ages eleven, nine and five, should she prove false: "I'll geld 'em all. Fourteen they shall not see, / To bring false generations" (2.1.149–50). But do these examples indicate that audiences were fascinated first and foremost by the mysteries of fourteen-year-old girls' wombs, and that playwrights featured teenage girls merely to pander to this particular fascination?

Such claims in fact falter when we consider that Antigonus's is not the only depiction of adolescent girlhood in *The Winter's Tale*. Act 4 features the brainwork of sixteen-year-old Perdita, a girl who challenges the violent, gendered terms of suspicion and jealousy that structure the play's first three acts. Perdita flips and revises this particular masculinist script that casts all sexually mature females as potential whores, insisting instead that she will use "th' pattern of mine own thoughts" to "cut out / The purity" of her future husband's (4.4.368–69). In this play, and many others, Shakespeare works with divergent beliefs about what a girl will do once she experiences the change of fourteen years, but typically privileges those that feature her unique cognitive strengths and gifts. In this sense, *The Winter's Tale*'s engagement with early modern discourses of female adolescence epitomizes the work to which this book is committed.

Despite the fact that most (though not all) of the staged girl characters that I examine here would have been performed by boys, I insist that we not let the males who acted them subsume the actual, lively early modern girls that inspired them. As Mark Dooley argues, "it is important not to

simply fall back into reading the biological sex of the actor as an essential truth behind what are much more complex issues of representation."[63] The late twentieth-century focus by scholars on the boy-actor bodies beneath their female costumes has contributed to the modern critical erasure of girls' minds, body-minds, and brainwork, not just from the early modern stage, but from early modern culture more broadly. In an oft-quoted line from his influential *Shakespearean Negotiations*, Stephen Greenblatt argues for an Elizabethan teleology of gender that skews toward the male and "finds its supreme literary expression in a transvestite theater."[64] Such readings privilege boys, men, and masculinity at the expense of girls, women, and a more nuanced understanding of how early moderns imagined female adolescence.

Re-Cognizing Shakespearean Girls

As some of the examples I have referenced here make clear, Shakespeare was not alone in his depictions of girls' dynamic brainwork. I devote extended attention at different points in this study to non-Shakespearean plays that offer particularly robust examples of the cognitive phenomena I wish to spotlight. I intentionally include them here (along with many other non-literary texts) for another reason as well: to illustrate that representations of girls as cognitively industrious were not the invention of one author, but rather proliferated in a variety of early modern English forms and discourses.

That said, the dramas that Shakespeare had a hand in creating provide some of the most extended, complex, and semantically precise explorations of girls' cognitive processes and body-mind activities in the period. For this reason, his works do make up a majority of the literary representations that I focus on here. While I am drawn to the rich cast of adolescent girl characters (many of whom cluster around the age of fourteen) that move and speak through Shakespeare's authored and co-authored plays, there is another equally important reason why I feature their brainwork so prominently in this study. Unlike Dulcimel or Moll Cutpurse, Shakespeare's girl characters and their stories have lived on in the popular imagination long past their early modern English origins. They have been and continue to be used by artists and intellectuals across the world to represent concerns and interests that are unique to different times, places, and creators. In his 2004 play, *The Al-Hamlet Summit*, for example, Anglo-Kuwaiti writer Sulayman Al-Bassam transports Elsinore to an unnamed Middle Eastern kingdom and reimagines Ophelia as a fundamentalist suicide bomber to

create his critique of Western and Arab political corruption and authoritarian abuses. In 1851, Englishwoman Mary Cowden Clarke invented an Ophelia that reflected her Romantic-era ideas about girls as pure, unthinking creatures. In her *Girlhood of Shakespeare's Heroines*, Clarke gave her nineteenth-century readers an Ophelia whose simple mind and sweet nature are her greatest assets: Hamlet is drawn to "her innocence, her modesty, her retiring diffidence; his masculine intellect found repose in the contemplation of her artless mind, her untaught simplicity, her ingenuous character; his manly soul dwelt with a kind of serene rapture on the sweet feminine softness of her nature."[65]

There is nothing inherently wrong, of course, with adapting a character to suit a specific audience, or to help challenge or convey a particular belief system. Where such projects become problematic, from the point of view of my work here, is when particular renditions are passed forward and taken up by other eras and artists as evidence of universal truths about female adolescence and female brain function. As Clarke was imagining her artless Ophelia, John Everett Millais was painting what has become the iconic image of Ophelia as a girl on the verge of drowning in her self-destructive grief. Surrounded by flowers and the willow tree from which she has fallen, she floats in a trance-like ecstasy, with only her face (eyes and mouth half-open), breast, and martyr-like hands still above water. Scholars, directors, and artists largely have taken up this legacy, interpreting her and many of Shakespeare's other girls in terms of their fragile adolescent minds and lovesick bodies. Even Al-Bassam's pro-active Ophelia is ultimately and literally reduced to her explosive body.[66] Psychologist Mary Pipher's 1994 bestseller, *Reviving Ophelia: Saving the Selves of Adolescent Girls*, helped cement this relationship between erratic, endangered girlhood and Shakespeare's tragic heroine for a popular twentieth-century American audience. Work like hers testifies to the endurance and marketability of *this* Ophelia, the one who is remembered for her uncontrolled and self-destructive tendencies, rather than for her frequent acts of perception, artistry, and iron-clad memory in the play – specific kinds of brainwork that I explore in Chapter 4. "Where is the beauteous majesty of Denmark?" she asks when she first enters the play as "mad" Ophelia (4.5.21). Everyone in the rotting state of Denmark seems to have forgotten why such a question matters. Is it so surprising that modern-day readers and audiences also miss its import?

We do seem to prefer our Ophelias unhinged, our Juliets mindlessly enthralled by love, our Mirandas charmingly sheltered and naive. As a result, the original, cognitively industrious versions of these girls have

remained on the blind side of *our* wits. We do not recognize them, but also, and more importantly, we do not fully understand early modern girlhood – and this impacts how we understand female adolescence in our own time. Catherine Driscoll speaks to this point in her cultural history of girls when she articulates what is at stake in these adaptations. Our modern ideas about female adolescence are informed by earlier depictions of Shakespeare's girls, and these notions in turn shape how we look back on the past and see the originals: "If our idea of youth has been shaped by Shakespeare," she argues, "it is not surprising the plays should fit it."[67]

Cognition and Girlhood puts pressure on these familiar but ultimately skewed readings of the past. The interpretive lens I develop here allows for necessary revisions of early modern girls – even Ophelia, who, as Bruce R. Smith's work on winks and cognitive perceptual moments suggests, deserves a more nuanced consideration than is usually given in broad-stroke depictions of her frailty: "her winks and nods and gestures," as Horatio describes her, "[i]ndeed would make one think there might be thought" (4.5.11–12).[68] As I will show, Ophelia is one of many early modern girls who use their brainwork to judge, revise, and leave their mark on the worlds and people around them; to imagine and invent new ways of thinking; to pursue their desires, and (if possible) change and expand their lives, not end them.

Organization of Chapters

I have divided the book into chapters that each highlight a different feature of the female brainwork I have identified. Chapter 1 introduces the foundational premise of this study: that the change of fourteen years was a lightning rod for some of early modern England's most vital ideological controversies; and that girls' newly industrious brainwork was figured as an active participant in these disruptions. Two well-known early modern girls, one fictional and one real, both of whom are on the verge of pubertal change, serve as case studies: Shakespeare's almost-fourteen-year-old Juliet Capulet, and the fourteen-year-old Mary Glover, a London girl who shot to fame after she allegedly was bewitched by her neighbor. Juliet's and Mary's age and ripeness are marked in similarly fastidious ways by the men who tell their stories; and these changes of fourteen years initiate both of them into the cognitively agile period with which this book is concerned. The precise day of Glover's menarche becomes a central point around which her chroniclers construct their conflicting arguments about her possession – a spectacular event that aggravated some of the most

contentious religious and scientific debates of her day. All of the men who witnessed and wrote about Glover's extraordinary physical and verbal acts grapple with the possibility that she could be willing her body-mind contortions, which were variously explained as a teenage girl's performance, a scam, divine channeling, demonic possession, and authentic illness. Juliet's pubescent body-mind, like Glover's, plays in the gray area between pathology and performance. Her thoughts and actions, I argue, participate in contemporary medical debates about the female body-mind (how to diagnose and control it especially). Although Juliet, unlike Glover, lets the audience in on the careful brainwork that drives her conscious psychophysiological manipulations, she leaves her Veronese spectators to wrestle with their own unsettling inability to interpret her.

The next three chapters each feature one of the principal cognitive faculties, and are organized by the part of the brain, front to back, in which each generally (though not without debate) was believed to operate. Although brainwork and the animal spirits that powered it often were imagined to conjoin the operations of these individual faculties, I have chosen to separate them out in order to analyze the unique problems and possibilities that imagination, understanding, and memory raised when activated in the adolescent female brain.

Chapter 2 focuses on the imagination, the faculty that worked with (and sometimes against) the common sense to conceive, apprehend, and retain what the five external senses introduced to the front of the brain. Parents and guardians fretted especially over the impressionable quality of this faculty, and the potentially corrosive sensory materials it might absorb and then distribute through the female body-mind. Early moderns worried about imagination's connection to fancy, a power that could create forms from nothing – a potentially troubling ability in adolescent girls, as it enabled them to produce illicit visions and physical responses; but, as I show, girls also deployed the imagination in positive ways, using it to engage with and refashion restrictive forms and ideas. The girls I explore in this chapter have imaginations that work in both of these registers as they "coin," or devise, ideas and sensory forms and showcase the material effects of their brainwork on the people and conventions around them. The chapter begins with fifteen-year-old Alice Egerton and her performance as the Lady in John Milton's *Maske presented at Ludlow Castle*, commonly known as *Comus*. Alice offers us an opportunity to focus on an actual teenage girl in a dramatic production – in this case, a masque written in honor of her father, the Earl of Bridgewater. Of equal interest is a manuscript, written and revised in Milton's hand, that evidences his

struggle to describe the potentially rogue operations of "youth & fancie" in this particular girl's brain and body-mind – a struggle that is emblematic of his contemporaries' ambivalent views of the imagination. Alice helps enact the battle of the fancies that Milton eventually scripts between a girl and her sorcerer/captor – a battle, I argue, in which Alice's brainwork, and her "fancy" in particular, emerges as a powerful phenomenon. I then turn to the imaginations of three other endangered girls: *Othello*'s Desdemona; and the Jailer's Daughter and Emilia from *The Two Noble Kinsmen*. Desdemona serves as a case study in how a girl's mind becomes "bound in the cave of care" upon marriage. I track how her imaginative abilities telescope over the course of the play as she learns that she must restrict her "discourse of thought" to accommodate her husband's jealous fantasies – a cognitive shift that proves fatal to them both (4.2.157). Through the girls of *The Two Noble Kinsmen*, I consider how much social status factors into the representation of a girl's fanciful desires and imaginative brainwork. Although the low-class Jailer's Daughter is subject to a sexual trick that playwrights would not have inflicted on an upper-class character, she also has a coining brain that echoes that of the royal teenager Emilia, complements the gentle Desdemona's ability to see what others cannot, and matches in power the mighty brainstorm that *Comus*'s Lady threatens to unleash. All of these girls, I argue, use their imaginations to go beyond what is present to the senses and to envision possibilities that could liberate themselves and others from dominant and degrading cultural norms.

Chapter 3 moves to the middle of the brain, where the faculty of understanding (sometimes described as reason) contemplated and assessed forms and ideas, and where wit, invention, and intellectual progress took shape. Here I explore a persistent connection in the early modern period between fathers, daughters, and the production of new knowledges – one that found expression in the popular emblem of Truth, the daughter of Time. I begin by analyzing how this figure was used to embody scientific and religious innovation. I then consider the early modern revival of an ancient myth about the potter Dibutades's daughter, a girl who traces her absent lover's form and (according to early modern revisions of her story) invents the art of painting. These two daughters help frame my analysis of two Shakespearean ones, *All's Well That Ends Well*'s orphaned Helen and *The Tempest*'s island-bound Miranda. After briefly considering how Helen uses her physician-father's art to produce her own ambitious project, I finish with a reading of Miranda and Prospero. Shakespeare gives this daughter a "beating" mind that interacts with and challenges her father's old art; her brainwork also signals the intellectual changes,

based on observation, that were emerging from new scientific and philosophical ideas.

Chapter 4 focuses on the memory, the faculty believed to work in the brain's rear ventricle. Here I consider memory's increasingly vital ethical function and the role of the changing adolescent girl's brain in negotiating this work. In *Hamlet* and in Shakespeare and George Wilkins's *Pericles*, Ophelia and Marina remember and testify to narratives of the past that are intimately connected to questions of ethical leadership and to the preservation of suppressed communities and individuals. My analysis of *Pericles* begins with a close reading of Wilkins's contemporaneous prose account of the play, *The Painfull Adventures of Pericles, Prince of Tyre*. In this version, Shakespeare's co-author graphically describes the rape of Antiochus's daughter by her "unkingly" father, an act that *Pericles* the play excludes. I read Wilkins's prose episode as a suppressed history of tyrannical misgovernment and violence that emerges in the play-text through its repeated stagings of fathers' violence against their daughters and, finally, through the brainwork exhibited by fourteen-year-old Marina as she recollects past traumas. Next, I turn to *Hamlet*'s Ophelia and explore how her brainwork and testimony preserve the memory of regicide in Denmark's recent history. She sees what others either cannot or will not, but she also remembers and distributes the shared histories of English Catholics who were officially silenced by the Tudor state. In this part of the chapter, I begin a line of argument that engages with the relatively recent turn to religion in early modern studies. Scholarship that focuses on post-Reformation England in particular has enabled new understandings of English Catholicism's endurance and of the women, real and imagined, who carried on its legacy.[69] As Jessica Slights and Michael Morgan Holmes argue, "[i]f the English Reformation succeeded in inhibiting official religious sororities, . . . it had more difficulty quelling public debate about the value of the contemplative life."[70] And yet there was a type of English female central to this life's endurance that was no longer officially allowed to show herself on native soil in the early modern period: the Catholic girl training to commit herself to God. While these girls still lived on the Continent and in recusant English households, they were no longer a part of English people's authorized day-to-day spiritual lives and practices. In the absence of these praying females committed to God and to the salvation of their Christian communities through prayer and remembrance, to whom could early modern English subjects turn for such spiritual services? I am convinced that there is more than just hostile innuendo to Hamlet's demand of Ophelia that she remember all of his sins in her prayers and get herself to a nunnery (3.1.92, 122).

Having demonstrated the different ways in which girls' adolescent brainwork was seen to direct each of the principal faculties (imagination, understanding, and memory), I turn in Chapter 5 to the mind as a whole, and examine the phenomenon of girls "putting on" the minds of others. When they engaged in these acts of cognitive play, I argue, girls were able to try on alternative perspectives and experiences – not necessarily male ones, but those that belonged to sexually active females: the lover, the harlot, the pregnant woman. The girls I consider here in John Lyly's *Gallathea*, Shakespeare's *The Winter's Tale*, and Margaret Cavendish's *The Convent of Pleasure* costume their bodies and their minds. Their ensuing performances allow them to project themselves into one or more of these roles without actually becoming "women" in a heteronormative sense that would require their bodies to transform through penetrative intercourse, pregnancy, or birth. The girls who dress up in these plays do so under different levels of duress, but they all share an ability to use their brainwork to manipulate the Protestant girl-to-woman script they were expected to follow – to resist, revise, and, in some cases, reject it.

In the final chapter, I consider the focused, devotional brainwork that early modern writers attributed to Catholic English girls in particular who were training to serve God. By turning their body-minds toward a life of perpetual virginity, these post-Reformation girls might retain the cognitive gifts of adolescence indefinitely. In this way, they challenged early modern ideas about cold, mentally inert female adulthood as well as Protestant-inflected trajectories of female development that culminated in marriage. Here I focus on the seventeenth-century life writings and paintings that chronicle the spiritual development and teenage years of Mary Ward, the Catholic Englishwoman who founded more than a dozen religious houses on the Continent to educate England's recusant girls – a process that included teaching them theatrical skills that Ward thought they would need to become strong defenders of their faith back home. When we consider these biographical and autobiographical materials alongside surviving depictions of her work with England's Catholic girls, we gain a deeper, more nuanced perspective on the early modern ideas about female adolescent brainwork that this study as a whole develops.