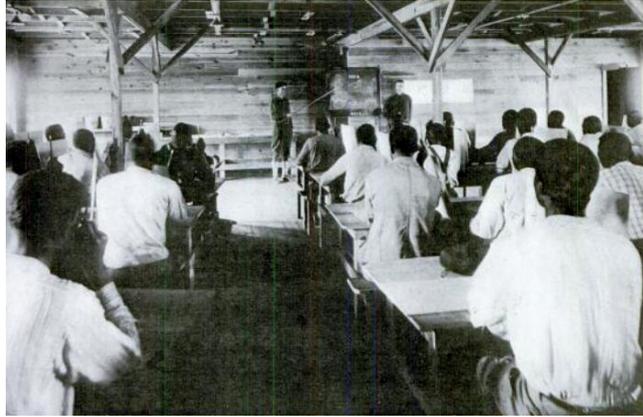


# Stimulating Intelligence

## *IQ Exams and the Cinema*

Imagine for a moment that you are an army recruit drafted for military service during World War I. You are stationed at one of the many camps dedicated to transforming draftees into battle-ready soldiers—say, Camp Bowie in Texas, Camp Dix in New Jersey, or Camp Dodge in Iowa—and you are awaiting your assignment.<sup>1</sup> You are also “illiterate,” or at least you have been labeled as such. Perhaps you never attended school or are a recent immigrant who does not read or write English. Or, perhaps, you are simply entering one of the all-Black battalions, and the junior psychology student who is charged with assessing your reading comprehension simply categorized your entire cohort as illiterate *en masse*.<sup>2</sup> Whatever the reason, you have been assigned to the “beta” group of illiterate recruits (fig. 1), who are separated off from the “alpha” group of English-language readers and writers. You and somewhere between twenty-five and one hundred men and boys are ushered into a large room.<sup>3</sup> Rows of chairs are set up facing the front, like a classroom, an auditorium, or a movie theater. Or perhaps you are directed to sit on the floor. An unusual blackboard has been placed in a central location, draped with a curtain, as if part of a stage set for a play. Two young men, dressed in military uniforms, sit at front, waiting until everyone is seated before handing out pencils and examination booklets. Once finished, they stand on either side of the blackboard. One man begins to speak loudly, slowly, and with emphasis: “Attention. Watch *this* man. . . . *He* is going to do *here* (tapping the blackboard), what *you* (pointing to different members of the group) are to do on your papers. . . . Ask *no questions*. Wait till I say ‘Go ahead!’”<sup>4</sup> With that, a man at the front announces that they are going to begin, and he raises the curtain covering the blackboard to reveal an image. It displays a grid with rows of pictures. One row includes a four-fingered hand, a fish with no eye, and a man whose pipe is floating in the air in

FIGURE 1. Photograph titled “Group Examination Beta with Negro Recruits” from Robert M. Yerkes, *Psychological Examining in the United States Army* (Washington, DC: US Government Printing Office, 1921).



front of him.<sup>5</sup> “Look!” says the demonstrator as he points at each image. “Fix it; fix it,” he says.<sup>6</sup> The demonstrator then completes each of the pictures. He finally tells you to open your book, which contains a similar set of images, and instructs you to start. After a few minutes, you are told to stop, and a crank is turned on the blackboard that rotates the screen to bring a new image into view.<sup>7</sup> Image after disconnected image—mazes, portraits of faces, abstract geometric shapes, dismembered stick figures—replace one another on the blackboard. You are told to engage with each image in a particular way, and to record your engagement by drawing on a copy of the picture in your test booklet. At the end of the testing session, your booklet is collected and sent off to a centralized facility where it will be graded against the “correct” ways of seeing these images. Your gaze has been both directed and documented.

The above scenario is generated from Robert Yerkes’s 1921 report *Psychological Examining in the United States Army*, which he developed in tandem with his initial studies into primate cognition. These psychological tests determined the careers of many soldiers during World War I. In 1917, Yerkes, who had long worked on testing in American schools, capitalized on his role as head of the American Psychological Association to successfully lobby the army into using intelligence testing for the placement of incoming recruits.<sup>8</sup> The influx of new soldiers during the war had generated a massive personnel problem for the military, which was ill-equipped to accurately process and assign ranks for them all. But what army generals considered a logistical nightmare, Yerkes envisioned as a unique opportunity to put his theories into practice. In the controlled infrastructure of the military and the vast number of test subjects, Yerkes saw a lab-like setting for testing his psychological theories. By the end of 1917, he had overseen the administration of intelligence exams to 1.75 million people, a data set whose scope and diversity was unprecedented.<sup>9</sup> In doing so, Yerkes effectively shifted the discourse around IQ measurements from a local and anecdotal level to a national one.

Much has been written about these tests, including their role in beginning military psychology, establishing psychology as a stand-alone discipline, institutionalizing standardized testing, expanding the pernicious influence of eugenicist theories of race, and fueling anti-immigrant legislation in the 1920s.<sup>10</sup> But none of these analyses address the central role that theories of spectatorship played in the creation and implementation of the exams. The following chapter uses the lens of film studies to correct for this, reexamining the tests *as media objects* that existed within a broader media ecosystem that included film.

Doing so allows us to clearly see the importance of early cinema discourse for Yerkes's theories of race and intelligence, a discourse that Yerkes both responded to and interwove into his practice of applied psychology. Unlike Laura Mulvey's famous articulation of the male gaze in classical cinema, which denotes a position of objectifying power and authority, the act of looking in Yerkes's iteration was an act of profound vulnerability.<sup>11</sup> To him, viewers unwittingly expressed and revealed essential parts of themselves in the ways that they gaze. As we will see, Yerkes reimagined racial categories *as distinct forms of spectatorship*, which could be monitored during a screening and then operationalized by governing bodies such as schools and the military. This basic assertion, a shift away from the anatomical theories of race from the nineteenth century, had massive effects outside the testing space itself, such as when the nearly two million army test-takers were segregated based on their results or when the tests were lauded as essential tools for social management or when the test findings were used as evidence of the threat of immigration in congressional debates. In each of these instances, scientific theories of race were translated into practices of institutional governance through Yerkes's use of media.

Yerkes's theories have long since been debunked as inherently biased and racist, most famously by his contemporary Franz Boas and later by Stephen Jay Gould.<sup>12</sup> Yet they continued to shape Yerkes's approach to visual media long after he stopped working in intelligence testing and moved his focus to his primate labs, which we will examine in the next two chapters. Within the context of Yerkes's scientific practice, the structures of the IQ exams serve as implicit examples of his broader media theory, which would later be put into practice with his animal subjects. Yerkes's military exams also represent a dark potential for theories of media as a material manifestation of thought, cognition, and emotion. As we will see, Yerkes yoked such theories to his own racist political project. What Yerkes described as "psychotechnology" became a powerful institutional tool for naturalizing and institutionalizing racist hierarchies and was, in fact, an essential component in eugenicist conceptualizations of race. The fact that these theories and uses of media were demonstrably wrong made them no less effective as means of exerting control.

The basic structure of such theories continues to haunt our media ecosystem, in which algorithmic marketing based on race and the gaze has become widespread.<sup>13</sup>

Like in Yerkes's tests, contemporary mass media is intent on dividing its viewers into demographic groups that can be optimized rather than addressing an imagined universal spectator. The assumption that racial identity defines what one will see when interacting with media, and that this dynamic can be controlled and operationalized, persists even though Yerkes's eugenicist theories have long since been rejected.

#### CONTROLLING DIFFERENCE: IDENTITY AS SPECTATORSHIP

In 1913, Robert Yerkes began searching for what he described as a "universal point scale," a single system for accurately evaluating the intelligence of any test subject. He and a series of collaborators began administering intelligence tests in Boston schools, where they struggled to devise a test model that could be applied across very different students in very different classrooms. Confronted with the melting pot of the public-school system, Yerkes and his colleagues quickly ran into the challenge of evaluating diverse populations, a central concern of the Progressive Era. Describing this work for a 1915 monograph outlining their new method for evaluating student IQ scores, Yerkes and coauthors Rose Hardwick and James Winfred Bridges wrote: "Our city schools as well as our institutions for the criminalistics and the mentally defective or diseased contain individuals of all races and of the most varied heredity and sociological status. It becomes perfectly clear to one in such an institution . . . that only through familiarity with the nature and degree of mental ability which is characteristic of the sexes of various ages, races, inheritances, environments, and so on, can the examiner understand and fairly evaluate an individual's performance in a mental examination."<sup>14</sup> Here, Yerkes and his coauthors found themselves adopting a complex position, arguing that the only way to achieve an accurate form of measurement was through an increasingly refined attention to the specifics of an individual test-taker's identity. Universality could only be achieved through difference.

Between 1880 and the First World War, approximately twenty-five million people immigrated to the United States.<sup>15</sup> Rapid urbanization and a constant flow of immigrants from southern and eastern Europe dramatically reshaped the American landscape, stoking anxieties over cultural difference.<sup>16</sup> This unprecedented diversity fed into an enduring obsession over American identity and the best methods for either rejecting or integrating incoming groups of people into a coherent national whole.<sup>17</sup> During this period, both standardized tests and the cinema were seen as methods for addressing the large heterogeneous crowds that characterized a rapidly industrializing urban America. As technologies, both the moving image and standardized testing were designed as mass media, each functioning as a systematic, reliable, and repeatable means of communication with large groups of people. In each instance, diverse audiences entered

a space in which their attention was stimulated and directed by images, often placed centrally at the front of the room. The success of such events was premised on developing a method for engaging all the varying spectators and synthesizing them into a singular audience. In this way, both were engaged in what Jonathan Kahana calls “intelligence work,” creating an imagined public through their means of address and producing a form of citizenship in the act of viewing.<sup>18</sup>

Thanks to the work of contemporary film historians, we have a good sense of the multifaceted ways in which film conducted such intelligence work in the Progressive Era.<sup>19</sup> Many Progressive Era reformers saw cinema as a tool for generating national cohesion as the nation’s most successful commercial entertainment during these years.<sup>20</sup> As Miriam Hansen has shown, the belief in film’s status as a “universal language” by the likes of early film theorist Vachel Lindsay and director D. W. Griffith made it an ideal medium for communicating American identity to the multilingual, multicultural masses.<sup>21</sup> Deployed by public health departments, factory employers, civic groups, congregations, and others, cinema was believed to be an ideal means of indoctrinating newcomers into American social norms.<sup>22</sup> Hansen argues that industrial capitalism and a burgeoning consumer culture fueled the development of cinematic narrative structures that sought to “build an ostensibly classless mass audience,” who could all understand and enjoy the cinema despite their diverse backgrounds.<sup>23</sup> Theoretically, the goal was for all Americans, regardless of their spoken language or cultural upbringing, to participate in these onscreen American dreams, even if such participation was largely curtailed outside the theater by the realities of an industrial economy predicated on white supremacy and patriarchy.<sup>24</sup>

Like cinema, the intelligence test was a tool for managing and ordering the body politic, arranging its various parts for the purposes of cohesion. Whether used for communication, assimilation, or evaluation, both the rise of cinema, as the century’s first popular mass medium, and the development of testing procedures were premised on circumventing the divisions caused by language—facilitating an exchange of information that operated on what was considered a precultural, primarily visual, level. At the level of design and function, Yerkes’s World War I tests mirrored those of the feature film, including a rapt and silent audience staring at images in the front of a large room. Indeed, at Camp Cody, New Mexico, testers used a nearby vaudeville and film theater, the Liberty Theater, as an examination space, since it met the requirements for displaying the test’s images to large groups better than any building on the military base.<sup>25</sup> And film itself was sometimes used as part of these tests. One of the smaller initiatives being run by army psychologists at the time was to observe and monitor Black recruits while watching the sex hygiene film *Damaged Goods* (Tom Ricketts, 1914) and monitoring their responses.<sup>26</sup>

Nonetheless, the goals of intelligence testers were also fundamentally different from those of filmmakers. Rather than creating a shared singular experience

for a heterogeneous audience, Yerkes and his cohort of intelligence-testing psychologists were concerned with sorting audience members into a stable hierarchy that could be put to use outside the screening/testing space. His commitment to biologically determined theories of race led Yerkes to seek out differences among spectators around which he planned to build a social structure.<sup>27</sup> By focusing on the precedent-setting example of Yerkes's World War I exams, I offer an alternative version of Progressive Era spectatorship and its social function, one less connected to the egalitarian principles often associated with the period than to nineteenth-century scientific theories of racial hierarchy and the planned application of these theories through a eugenicist political platform.

Yerkes developed his tests at a time when psychologists sought an individual test and scoring mechanism that could be universally applied to different groups. By the 1910s, various attempts to implement such tests had consistently produced wildly disparate results that could not be synthesized under a single coherent grading rubric.<sup>28</sup> Working to design more effective tests led Yerkes to generate his own unique conceptions of spectatorship, identity, and assimilation. He theorized an *expressive* spectatorship through his IQ tests, which supposedly relayed internal truths about viewers' heredity, mentality, and behavior. He believed that how one viewed visual materials, like film, was an expression of otherwise invisible internal states of mind, which in turn could be traced back to one's genetic makeup. This act of expressive viewing became a central structural component of Yerkes's subsequent primate films, as we will explore in later chapters. His goal with the IQ test was to monitor and record the gazes of his audience and operationalize this information outside the screening/testing space. With this new approach, he grouped and ranked individual viewers into discrete categories of race, ethnicity, and gender, each of whom supposedly experienced the world in a different manner, an approach that was diametrically opposed to cinema's supposed universal spectatorship. Through this process, the unruly mass became a clearly defined assembly of quantifiably different identity groups, each of which expressed themselves in their reactions to the world around them. Thus, this project was part of a larger shift to psychologically define and regulate racial categories, which would contribute to the xenophobic backlash of the 1920s and play a crucial role in the subsequent passage of stringent immigration restrictions.<sup>29</sup>

Yerkes's approach to race was driven by a belief in what Richard T. von Mayrhauser calls his "unified concept of social Darwinian hierarchy," which itself was the product of generations of scientific racism.<sup>30</sup> Emerging alongside Darwin's theory of evolution, social Darwinism merged cutting-edge ideas from scientific naturalism with preexisting frameworks of white supremacy. Social Darwinists universalized white culture as the model of humanity, positing it as the forefront of evolutionary progress.<sup>31</sup> Well before Darwin, as Warren Montag demonstrates, Enlightenment philosophers generated notions of progress and "universal humanity" that were largely synonymous with European whiteness.<sup>32</sup> This brand

of humanism instituted a studied white gaze that conceptualized archetypical humanity against perceived differences between races, a gaze that envisioned non-white bodies as a border or intermediate step between the categories of human and animal.

Nineteenth-century social Darwinists developed their own scientific visual culture to legitimize this hierarchy. Naturalists, missionaries, and early anthropologists inspected racialized bodies for “abnormalities” that marked them as different from, and allegedly less evolved than, their own white bodies, which were coded as the human norm.<sup>33</sup> David Green writes that “within this biologisation of history the perception of a natural order of social structure and stratification was thought to be readily available in the evidence of the human body.”<sup>34</sup> As we will see in the third chapter, this colonial fantasy of racialized “development” was a central theme in Yerkes’s embrace of eugenics.

By the 1910s, however, theories of heredity and race had raised fundamental questions about locating racial differences in visible features of the body. Yerkes was operating at a time when Mendelian genetic theory—prominently espoused by Charles Davenport, one of Yerkes’s teachers—had radically destabilized racial categories. Within this context, “racial types” gave way to “populations” in which each individual was, according to Nancy D. Fortney, “a unique carrier of diverse genotypes or heritable components of heredity, observable by the outward manifestations (phenotypes) of inherited characteristics.”<sup>35</sup> Race here was defined by “norms” within populations—an accumulation of shared, yet distinct, traits that were demarcated by their visible phenotype. Previous attempts at visualizing and defining race had worked to create a single, visible racial “type,”<sup>36</sup> but, within the newer framework of Mendelian genetics, the focus on genotypes rather than phenotypes defined race as a diverse amalgam of genes within a population rather than as observable traits or a lone ideal.<sup>37</sup> The practice of visualizing racialized bodies gave way to statistical tallies of behavior within racially defined groups.

Deeply embedded in these shifts, Yerkes’s post-Mendel approach to race and its role in society led him to develop his own methods of observation and visualization. His form of social Darwinism did not primarily tell the story of evolution through differences in anatomy but rather in personality and identity; thus, approaches toward measurement and visualization had to be reconsidered. Population norms and mental functions were difficult phenomena to capture systematically through sight. The psychologist could not identify and quantify these differences simply through the act of looking at bodies, ruling out the anatomical photographs and skull measurements that had defined previous generations of social Darwinian science.<sup>38</sup> Within Yerkes’s approach, the gaze was not used by scientists to evaluate race but rather was monitored in test subjects as an expression of racialized interiority.

Yerkes defined racial groups by their capacity for particular types of behavior, which he saw as empirically testable phenomena that were ontologically separate

from the organisms and individuals who exhibited them. Individuals may display more or less empathy or thought, but the categories of “empathy” and “thought” remained the same in each instance, allowing the same questions to be used when testing them. For Yerkes, the role of the IQ tester was comparable to Daston and Galison’s description of botanists in the sixteenth century or Foucault’s description of doctors practicing nosology in the eighteenth century.<sup>39</sup> All of these scientific practitioners created their findings through a process that Daston and Galison call “truth-to-nature,” wherein underlying types, general forms, and categories are abstracted from the massive fluctuation of details in any given scientific subject. Within the schema of “truth-to-nature,” scientists order facts according to meta-physical principles or ideals, whether they be the shape of a disease, the type of a leaf, or the function of a behavior. Such an approach requires what Foucault describes as a look that sees past the body that is actually present, to the broader, more essentially true, concept or organization that it conveys.<sup>40</sup> For Yerkes, these concepts were particular forms of ideation.

According to Yerkes, the evaluation of racial differences was predicated on identifying and measuring certain distinct types of mental activity—categories such as receptivity, imagination, empathy, and thought—each of which expressed themselves in individuals according to evolutionary biology and age.<sup>41</sup> Yerkes theorized that these “types or classes of behavior” were always present in the human mind, though to differing degrees, and therefore could provide an underlying unity for comparing and evaluating different ages, races, and ethnicities. In the Yerkes-Bridges test, developed in 1913, Yerkes claimed to take account of different behavioral types by producing a four-part evaluation of mental functions, each of which had an equal role in determining the final score of any test, no matter who took it.<sup>42</sup> As he wrote of this test: “it is extremely improbable that serious injustice should be done any individual by the neglect of racial characteristics, for one of the great and obvious advantages of the [Yerkes-Bridges test] is that many aspects of mental ability, or, more properly, mental functions, are measured, and the total score, therefore, represents a varied group of mental measurements.”<sup>43</sup> Yerkes asserted that he had created a comprehensive picture of intelligence due to the diversity of behaviors being evaluated, while also claiming that the consistency of the behavioral types provided a unity through which different racial groups could be compared. Implicit in this claim was the assertion that racial difference manifests in different kinds of thinking—that is, that the proportions of each “mental function” were racially determined. Such claims were made explicit in his later summary of the World War I exams, where Yerkes suggested that there are dramatic differences in the intelligence “types” of Scandinavian recruits versus those of Slavic or Latin descent, and where he proposes that the lower scores of Black recruits resulted from “qualitative differences” in their thought process.<sup>44</sup>

The result was a statistical approach that employed an ever more detailed attention to racial and ethnic differences but always in the service of producing a more accurate singular appraisal of general human intelligence.<sup>45</sup> Individual intelligence was broken down into a series of diverse “functions” or “types,” but these functions ultimately were combined to yield a single number designating a subject’s particular position in the hierarchy of ability. Similarly, divisions were drawn within populations along gender, racial, and ethnic lines but only toward the creation of separate norms for each group, norms that were meant to more fully integrate different backgrounds under a single testing regime.<sup>46</sup> Throughout his scientific and political writing, Yerkes emphasized the synthesis and integration of difference into a totalizing whole, therefore positioning difference as something to which an incorporating system (a nation-state, a military chain of command, a classroom, a mental institution, etc.) must be calibrated in order to direct all its heterogeneous parts effectively. As Yerkes entered into the development of his army IQ tests, he did not seek to create a universal spectator who could be inhabited by many different individuals, as did so many of the Progressive Era reformers; rather, he worked to define and differentiate audience members so that their differences could be controlled and managed. As we will see in the next section, his tests were meant to elicit and document these differences by creating a scene for spectatorship, transforming the diverse mass into a collection of differing groups waiting to be categorized. No longer focusing solely on observing the racialized body, Yerkes believed that repeated visual experiences, like film, operate like a microscope for behavior, revealing the otherwise hidden genetic predispositions in the reactions of those who watch.

#### MEASURING AUDIENCES: PSYCHOTECHNOLOGY, EVOLUTION, AND EVALUATION

In 1928, the neuropsychiatrist Louis E. Bisch received a surprise visit from James R. Quick, the editor of the film magazine *Photoplay*. Quick asked Bisch to pen an article for the magazine answering the question of whether the widespread popularity of movies meant that the American public were “morons.”<sup>47</sup> In his response, Bisch returns to his experience as a young psychologist administering Yerkes’s intelligence exams during World War I as director of the Psychiatric Division of the Fifth Naval District. Proclaiming himself a skeptic of the tests, he argued that recruits often engaged in ways that fundamentally eluded the exam’s rubrics, leading test administrators to miss many signs of individual comprehension by simply grading answers as correct or incorrect. Bisch then connected the unique responses of the test-takers to the many possible responses different audience members have while watching a film: “Pleasure, animation, excitement, sympathy, amusement, enthralled interest—the entire gamut of emotions have been

experienced by my movie neighbors while I remained as unmoved as a stone.”<sup>48</sup> He suggested that the claim that audiences are morons for such aberrant responses reproduces the problems of Yerkes’s exam in that both mistake the sensibilities of the examiner for the truth.

Yet the same year that Bisch disputed the claim that intelligence could be evaluated by the response of spectators, the behaviorist Orlando O. Norris proclaimed that “perception is an exhibition of intelligence.”<sup>49</sup> Indeed, the evaluative significance of spectatorship remained an ongoing debate within various fields of applied science, and moving images continued to be used for training and testing purposes throughout the century.<sup>50</sup> Bisch’s warning against interpreting audience responses as signs of intelligence and ability was apparently not widely heard, at least not by Yerkes. During his long career, Yerkes unceasingly championed his World War I exams as a prime example of the benefits of using media to study the minds of spectators. He called such media “psychotechnology,” a borrowed term from his longtime friend and mentor Hugo Münsterberg.

A close analysis of Münsterberg’s theories, and the ways that they were taken up by Yerkes, reveals the ways that Yerkes situated his use of media. Through his work with Münsterberg, Yerkes was steeped in the theories of psychology and the moving image. Münsterberg and Yerkes cotaught a course on laboratory psychology at Yale from 1902 to 1917, and each was deeply acquainted with the other’s theories and procedures.<sup>51</sup> Yerkes was well aware of Münsterberg’s research at Harvard’s laboratory of experimental science, where Münsterberg and his students used a variety of moving image devices to test perception—including the antirrheoscope, which created simple optical illusions through zigzag patterns when cranked in front of a participant’s eyes, and the “wave writer,” which registered physiological changes in participants’ bodies.<sup>52</sup> By asking test subjects to report on how they felt during these experiences, and pairing these descriptions with recordings of response times, heart rates, and other physiological indicators, Münsterberg envisioned individual psychological states as a kind of mental technology that could be induced, manufactured, and designed through media.<sup>53</sup>

Yerkes also knew of Münsterberg’s extensive writing on applied psychology, including its use in industrial, marketing, medical, pedagogical, and juridical spheres.<sup>54</sup> Part of this work involved a series of films Münsterberg developed for Paramount in 1916, which were formatted as IQ tests and functioned similarly to Yerkes’s beta exams, which were conducted a year later.<sup>55</sup> Yet the differences between Münsterberg’s films and Yerkes’s tests are telling. In a speech given at a Paramount reception party, Münsterberg linked his films with his claims about applied psychology.<sup>56</sup> He described both his pedagogical and industrial goals for the medium. On the one hand, he claimed that film should act as a textbook that could teach spectators to recognize their own mental strengths and weaknesses in what they saw onscreen. On the other hand, he argued that the ultimate purpose for these films was not simply individual self-realization or introspection but

also the “vast and far-reaching influence” of psychology as a field. Inspired in part by a nostalgia for German social structures and German idealism, Münsterberg conceived of psychotechnology as a form of national propaganda, claiming that advertisers, artists, and filmmakers could all use psychological principles to design symbols that would lead to greater national cohesion, just as religious iconography had in the past.<sup>57</sup>

Yerkes adopted a similar set of pursuits—using media technology to generate social harmony and duty—but his psychotechnology was adapted to meet the purposes of American eugenics rather than German idealism. Like others, Yerkes defined eugenics as the art of applying theoretical science toward “the control of human nature.” This control was premised on the psychologist’s role as a manager, which ultimately differentiated his approach from Münsterberg’s. As Jeremy Blatter emphasizes, Münsterberg’s configuration of the screening/testing space placed the power of the test in the hands of the audience, who were meant to be informed about their own capacities through the process.<sup>58</sup> In contrast, Yerkes adopted the methods of the eugenics survey when creating his tests, methods that he had learned under the tutelage of the infamous eugenicist Charles Davenport, where the goal was population management—controlling the vocation, reproduction, and health of different racial and ethnic demographics.<sup>59</sup> Davenport’s surveys were part of a widespread effort to gather data, producing the kinds of numbers that could statistically define large, heterogeneous groups of people. Similarly, the results of Yerkes’s World War I exams were also viewed by an outside board of psychologists who were in charge of assigning positions to each recruit based on the recruit’s score. In Yerkes’s arrangement, millions of cadets’ experiences of spectatorship were broken down into statistical data, which was then compiled and analyzed by the Army’s Statistical Unit in a central repository.<sup>60</sup> Here, applied psychotechnology and eugenics theories of race were paired with military infrastructure to direct and categorize soldiers within the hierarchy of the army.<sup>61</sup>

Unlike Münsterberg’s films, the test images in Yerkes’s WWI exams had dramatic effects on life outside the testing space itself. As historians such as Daniel J. Kevles, Stephen Jay Gould, and others have discussed, supporters of both segregation and immigration restrictions used Yerkes’s test results to legitimize their arguments.<sup>62</sup> Carl Campbell Brigham, an adviser for the army field testing who was brought in by Yerkes, wrote an influential analysis of the army tests titled *A Study of American Intelligence*, in which he argued for massive disparities in the supposed inborn intelligence between racial groups. In Yerkes’s introduction to the book, he infamously wrote that “no one of us as a citizen can afford to ignore the menace of racial deterioration or the evident relations of immigration to national progress and welfare.”<sup>63</sup> Yerkes also pushed the publishers of Brigham’s manuscript to release it before the House Committee on Immigration and Naturalization began debating a bill to restrict immigration in 1923, so that its claims could be included as part of the public discourse.<sup>64</sup> And, indeed, the language

of Brigham's analysis made its way into debates on the floor of the US House of Representatives, where the all-male and all-white members openly worried about the racial "purity" of the United States. When the Immigration Act subsequently passed by a landslide in 1924, it dramatically restricted the number of immigrants from select countries who were granted citizenship to the US.<sup>65</sup>

These rippling effects were all premised on Yerkes's notion that genetic differences expressed themselves primarily in a person's perception of the world around them. Test questions were therefore developed to bring forth different displays of inherited identity through the use of visual prompts, asking test-takers to demonstrate different mental capacities through the performance of different types of spectatorship. The beta exams tested everything from the ability to locate patterns and complete mazes to "accurately" ranking drawings of women according to beauty. In these tests, how one visually perceived and processed the world was the primary subject rather than any particular form of knowledge.

Take, for instance, the beta exam's "fix-it" and "aesthetic judgment" problems. The fix-it problems picture incomplete or jumbled images that test-takers were asked to "fix," including a missing rabbit's ear, the pin on a record player, the firing mechanism on a pistol, and the smoke from a chimney.<sup>66</sup> These images tested one's knowledge of the ideal form of the represented object, to which the flawed image was meant to be compared. The fix-it category also included "jumbled image" questions. Here, test-takers were asked to correctly reassemble a set of narrative comic strips that were placed out of order. Often the stories depicted were short morality tales (fig. 2)—a criminal commits a crime, is caught, tried, and imprisoned; a boy breaks a window, is found by his mother, and spanked.<sup>67</sup> Yerkes meant these questions to evaluate one's knowledge of moral cause and effect, supposedly demonstrating the ability to see the proper story of parenting or justice that structured the image frames. Inherent within this structure was the belief that one's values, thought process, and identity were wrapped up in the act of viewing media materials and that there was one singular "correct" type of gaze that could be defined by the test's designer, which would then be used to grade responses.

The test booklet was essential in Yerkes's psychotechnology because it recorded the test-taker's experience. These booklets were subsequently used to place each individual viewer within the institutional structure of the army. By combining the test booklet and the screening/testing space, Yerkes precisely exploited the distance between the image's ideal viewer—one who met the test-maker's definition of intelligence—and experiences of local audiences. Intelligent test-takers would have the same aesthetic ideals and definitions of beauty, symmetry, and justice as the test-makers. Those who did not share these ideals would reveal their aberrant spectatorship through their answers in the test booklet. Yerkes thereby fundamentally relied on the fracturing of audiences before reconstituting them in the space outside the theater.

Parts of this approach mirror the role of cinema for many Progressive Era reformers, who, as we have seen, sought to use the medium to produce identity

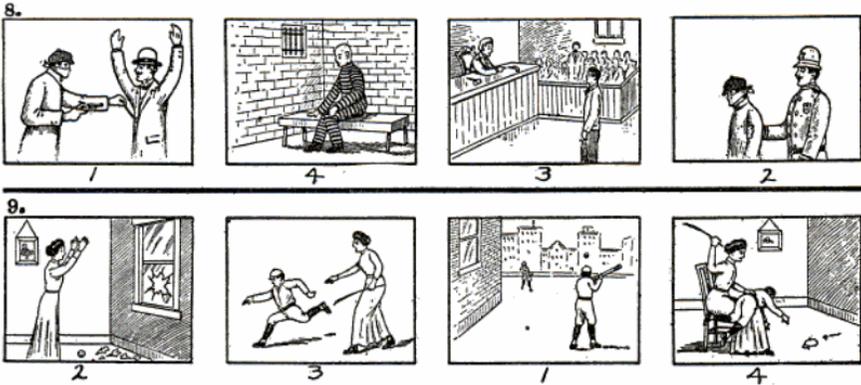


FIGURE 2. A “Jumbled Image” from Robert M. Yerkes, *Psychological Examining in the United States Army* (Washington, DC: US Government Printing Office, 1921).

and citizenship in their audiences. In their eyes, the act of watching a film could transform a spectator into the ideal student, worker, or citizen. Yet, at the same time, scholars such as Judith Mayne have argued that diverse immigrant audiences brought their own perspectives to bare in their spectatorship, interpreting cinematic images rather than being interpellated by them.<sup>68</sup> One could therefore read the Yerkes tests operationalizing these different relationships to the image as a means of measuring identity, deploying Yerkes’s own theory of spectatorship for the purposes of control.

Yerkes was mostly blind to his own position as the definer of the image’s “true” meaning; thus, he failed to see that he was testing for confirmation of his worldview.<sup>69</sup> As many commentators have noted—perhaps most important among them the anthropologist Franz Boas, a contemporary critic of the tests—arriving at the correct test answers often required a knowledge of American culture and ideological norms, specifically those of a white, native-born, and educated northeasterner like Yerkes.<sup>70</sup> In the World War I exams, one’s ability to see as this subset did, to conform one’s gaze to particular values, became synonymous with one’s general intellect. Yerkes’s gaze was elevated to the universal definition of “intelligence” against which any deviation was marked as a failure to properly see. Despite changes in technique, whiteness remained “the principle of perfection” that Montag identified in earlier forms of enlightenment racism.<sup>71</sup>

Throughout the 1920s and 1930s, Yerkes largely replaced his intelligence-testing work with primate experiments. This shift included a change in media technology. In the lab, Yerkes retained some of the devices he had used to test human intelligence, such as his “multiple choice apparatus,” which was adapted to test nonhumans on the same ideational functions as the exam he had developed in the Boston public schools by adapting its design to the particularities of each species.<sup>72</sup> But film also became an increasingly central instrument for recording and measuring the minds of his nonhuman subjects. The framework of Münsterberg’s

psychotechnology, as well as his social Darwinian and eugenicist theories of evolution, continued to guide Yerkes in the design and presentation of his films. Spectatorship and cognition remained deeply intertwined as he attempted to define scientific observation in the context of nonhuman behavior, as we will see in the next chapter.