The attempt to classify people by types is a pervasive human behavior. Early manifestations include the ancient yin and yang system of the Chinese, Hindu ideas of personality types that are reflective, emotional, active, or experimental, and the early Greco-Roman idea of the four humors—phlegmatic, choleric, melancholic, and sanguine. The twentieth century has seen its own attempts at classifications. These include the Stanford-Binet intelligence test, which classifies people according to their performance on five categories of thinking. Also, Jung’s ideas about personality (influenced by Hindu ideas), and their more recent realization in the Myers-Brigg Type indicator (Garner, 2000) remain popular.

Two perspectives of personality emerged during the mid- to latter-half of the twentieth century. The cognitive perspective found its roots in psychoanalytic study and is based on the belief that thought, while not observable, is a valid construct because it can be rationally understood (Schunk, 2016). Along other theoretical lines, empiricism, centered in observable phenomenon, led to behaviorism, which found its start in the theory of Watson and continued most famously through Skinner. The behavioral perspective of learning operated under the theory that only observable behavior was verifiable (Schunk, 2016). From the convergence of these two lines of theory came the controversial classification system of learning styles. This system spawned a great number of classification systems that found their use in multiple fields.

In looking at personalities and learning modalities and understanding them, one sees that two important areas are cognitive and learning style classifications. In psychology, cognitive style refers to the way people think and process information about others and the world. These styles are intrinsic to personalities and are shaped through interactions with other personalities. Generally, psychologists and educators have seen these cognitive styles as stable traits (Jonassen & Grabowski, 1993; Kozhevnikov, 2007). However, learning styles have been viewed as either trait or state, while elements like cognitive style and personality remain constant over time (and are structural, as with trait). The implication powering the learning style movement is that learners and teachers can change from using a learning style purposively, as with a state, to using these styles without thinking about them, as with a trait (Cassidy, 2004). The important part of this distinction, however, is that states are, unlike traits, more malleable. Therefore, states are open to being modified and expanded.

While cognitive style describes how learners process and think and is viewed as a valid construct, learning styles, which rely upon learners’ perceptions about how they best learn, have come to be seen as nebulous and frequently inaccurate. Researchers based their conclusions on a lack of credible, well-designed, or replicated studies.

Learning Styles in the Recent History of Education

Cassidy (2004) listed and described 23 learning style models with the purpose of showing similarities between those with overlapping qualities and hinting at ones that needed further empirical research into their claims and worth as instruments that could gauge both traits and states. Of these, the ones cited most were Gregorc’s (2017) Style Delineator; Kolb’s (1984) Experiential Learning Model (ELM) and Kolb’s (1985) Learning Styles Inventory (LSI); Honey and

Cassidy (2004) noted that the connection between ability (again, more of a trait) and performance was directly observable, while the effects of learning style upon performance were contingent upon the task being done. For example, those good at gathering meaning auditorily would do well in a lecture-based class (as cited by in Cassidy, 2004). He theorized that characteristics, rather than ability, had led to the formation of learning styles. As a result, Cassidy examined learning styles used in specific fields where learning styles’ effect on performance again would be contingent on tasks, here academia, medical school, career development, and police training. He then concluded that, because of their limitations and the lack of evidence on the reliability and validity of each model, learning styles needed to be carefully matched with the tasks their teaching would aid. He also cautioned that much more empirical research needed to be done regarding the reliability of current learning style measures, and advised those interested less in research and more in practice do more rationalization and integration of their reasons for using particular style measurements.

In major literature published at the same time in the U.K., Coffield, Moseley, Hall, and Eccleston (2004) listed 13 primary forms of learning styles based on a total of 71 types and identified three reasons for the complexity of examining the field: the loose links between its theory, pedagogy (including that of psychology, sociology, business, and education), and commercialism. He first divided these 13 styles amongst five main types of learning styles. The first deals with styles described as based upon one’s intrinsic make-up, which he then tied to the four modalities found in the Visual, Auditory, Kinesthetic, and Tactile Learning Style Inventory (VAKT). Among these styles he highlighted Dunn, Dunn, & Price’s (1989) and Gregorč’s (1982) models of learning styles. The second group of learning styles he tied to deep-rooted cognitive structures such as patterns of ability. Within this group he identified as most important Riding’s (1991) model, Cognitive Styles Analysis (CSA). The third group of styles were one part of what he defined as a stable type of personality. Here, he located Myers’s (2018) Myers-Briggs (1962) type indicator. He linked flexibly stable preferences for learning to styles in the fourth group: the Allinson and Hayes (1996), Honey and Mumford (1992), and Kolb (1985) tests of learning styles preferences. Finally, in the fifth group, Coffield et al. (2004) placed types that move from styles to approaches, orientations, strategies, and conceptions. In this body, he located learning styles indicators from Entwistle (1995) and Vermunt (1994).

After analyzing each of the 13 major types of learning theories, Coffield et al. (2004) concluded by dissenting with Cassidy’s (2004) call that learning styles be organized and conjoined into more carefully reasoned and fewer groups by saying that study of learning styles stood against this because of their development within pedagogically independent fields such as business, law, psychology, and education. Coffield et al. (2004) also pointed to the lack of a governing body to oversee this reorganization and to develop independent instruments for gauging learning preferences and propensities. Coffield et al. also addressed the problem caused by the commercialization of style testing instruments, their marketing, and the resultant defensiveness and territorialism this has reinforced within their makers. Also, because of the ease technology has given to such tests’ administration by professors and members of different industries and the fact that they can give these tests for so many reasons, often the desire to prove some random hypothesis not grounded in an overall body of empirical investigation, Coffield et al. called for external monitoring of the tests. But this is monitoring which, no doubt, will not come. Finally, Coffield et al. called for more ethically driven use of these tests and, in this way, sounded, unfortunately, like wishful thinkers rather than practical scholars.

Pashler, McDaniel, Rohrer, and Bjork, (2009) distinguished their work from Coffield et al.’s (2004) by claiming that the work of Coffield et al. was more of literature review (and an exhaustive one at that) than that of Pashler et al. (2009). Indeed, Pashler et al. took pains to point out that theirs was a study commissioned by the respected, peer-reviewed journal Psychological Science in the Public Interest to examine what sort of experimental requirements should be required for a learning style to be identified as valid and useful. But before proposing their experimental requirements, Pashler et al. pointed to two respected organizations that validated the commercial industry behind learning styles. First identified was a study commissioned by the National Association of Secondary Schools by Keefe (1988), which

“Gardner (2013) advocated that lessons need not be designed in different ways as per learners’ intelligences, but that different experiences offered students access to learning at points across a topic.”
was distributed widely. Then they called attention to Yale’s explicit propagation of learning style theory through a website maintained by the Yale Graduate School of Arts and Sciences in 2009. Since 2009, it is worth noting that Yale still offers a link under their Center for Teaching and Learning (2017), titled in its left column, “Teaching Students with Different Learning Styles and Levels of Preparation” (https://ctl.yale.edu/teaching/ideas-teaching/teaching-students-different-levels-preparation). However, when followed, this link now leads to an article titled, “Teaching Students with Different Levels of Preparation” (2017).

Pashler et al. (2009) then discussed the widespread use of learning style theory in general education teacher preparation textbooks and noted it was not much covered in educational psychology textbooks. As exemplars of the trend toward marketing learning styles, Pashler et al. also discussed Dunn and Dunn’s learning-styles model (Dunn & Dunn, 1994), Kolb’s (1984, 1985) Learning Styles Inventory (LSI), and Honey and Mumford’s (1992) Learning Styles Questionnaire (LSQ). In particular, Pashler et al. (2009) examined the extensive marketing of Dunn and Dunn’s work (still available under International Styles Network) and Kolb’s LSI as distributed by the Hay Group. Both were revealed to be tremendous money makers and educational “empires,” in effect.

Pashler et al. (2009) then isolated experimentation needed to prove learning styles theory worked. Learners divided into groups would have to be randomly assigned learning methods and take the same achievement test at the experiment’s end. Results would have to show that a learning method that increased the test scores of one type of learner was different than the style that helped learners from another style. Pashler et al. stressed that such a result was evidence of a crossover interaction only if the learning styles and methods crossed on a horizontal axis when the styles were plotted there. To provide criterion for learning styles’ existence and usefulness, the hypothesis only required the crossover interaction, not just the meshing hypothesis, which required that each group’s performance be matched to instruction within that group’s style. Only one study satisfied their requirements for a crossover reaction, and that study, the Sternberg Triarchic Abilities Test by Sternberg, Grigorenko, Ferrarri, and Clinkenbeard (1999) was still not stringent enough.


The problem with both articles’ claims is that they did not pay enough attention to Gardner’s own claims, which he reasserted in 2013, that his theory was about permanent traits, not states, which are more malleable and less easily corroborated (Strauss 2013). At least Allcock and Hulme (2010) allowed that Gardner (1983) meant his theory to be applied to individuals, not classrooms. In an article he did with Moran and Kornhaber (as cited in Allcock and Hulme, 2010), Gardner (2013) advocated that lessons need not be designed in different ways as per learners’ intelligences, but that different experiences offered students access to learning at points across a topic. In this way, the intervention that Gardner himself suggested sounds more like advocacy for the use of multiple learning strategies—not styles.

Cuevas (2015), like Pashler et al. (2009), looked for reasons for learning styles’ continued proliferation in general education textbooks and in business and educational technology. Mainly, Cuevas (2015) criticized business people, educational administrators, and teachers for not having enough familiarity with psychometric means and thus the tools to recognize that learning styles have been discredited. Like Pashler et al. (2009), Cuevas (2015) blamed also the commercialization of learning styles and their growth into self-sustaining empires determined to ignore criticism. He pointed out empires that have huge financial investment in them, singling out Dunn, of St. John’s University, and her successors.

Most important in this work, Cuevas (2015) clarified the template that Pashler et al. (2009) gave for ascertaining that a learning style and its implementation were valid. He also showed that learners’ own designations of their learning styles were usually inaccurate, rarely matching with the way they actually learned according to studies of metacognition.

Cuevas (2015) concluded that the research, sparse as it was, provided empirical evidence that showed weaker support for learning styles in recent years. In his attempt to weaken if not confute learning style theory with Gardner’s (1996) multiple intelligences, Cuevas also discussed Bishka’s (2010) article on how recent research based on neuroimaging shows that during any given activity, widely different parts of
the brain light up, suggesting that even during a task that was presumed to be operated by one part of the brain, the whole brain is involved—a fact that Gardner (2013) does not reject.

Cuevas (2015) also discussed the hope of those like Sankey et al., (as cited in Cuevas, 2015) whose own research from 2011 refuted the existence and worth of learning styles, that if nothing else, learning styles theory could garner feedback from learners that at the least increased their self-awareness and their motivation to learn and this way aid achievement. Regrettably for Sankey, Cuevas reiterated that the field of metacognition was finding that learners were often wrong in judging their learning needs and academic progress.

Though Cuevas’s criticism of research in the learning styles field was fierce, perhaps the strongest critic of learning styles theory was Willingham (Reiner and Willingham, 2010; Willingham, Hughes, & Dobolyi, 2015). In an article from 2010, Reiner and Willingham both asserted bluntly that there was no proof of learning styles’ existence and expressed their feeling that lack of knowledge of this could damage students and their educators. Though they acknowledged the worth of learning styles theory for stressing that individuals learn in different ways, Reiner and Willingham quickly qualified this observation by attributing these differences to ability and genetic background, in keeping with Cassidy’s (2004) assertion that intelligence is a trait not a state. Reiner and Willingham (2010) also stated that learners are deeply affected by their backgrounds, subsequent prior knowledge, and learning disabilities.

Next, Reiner and Willingham (2010) argued against those who claim that learners’ self-asserted learning styles need to be considered by showing that, when tested, these preferred styles have no effect on students’ ability to learn different subjects. They also underscored the idea Cuevas (2015) and Pashler et al. (2009) supported that learning styles have not been successfully matched to teaching styles in terms of producing higher achievement in students.

Willingham et al. (2015) examined Pashler et al.’s (2009) requirements for judging whether or not a learning style was provable, including examining the matching or crossover effect. Willingham et al. (2015) reaffirmed the basically unsupported nature of learning styles after, again, discussing the differences between styles and abilities. They also examined the reasons for learning styles’ continued popularity, finding their sources in confirmation bias wherein something becomes so rooted in cultural common knowledge that it predisposes teachers to see its proof in situations that could be unproven. A teacher could be unsuccessful at helping a student understand a problem until using a graph to help that student and having success, then conclude that the student is visually oriented when, instead, the student might be understanding the material as result of the number of times it has been presented. They also broached Gardner’s (2013) claims that researchers misunderstood him, once again evidencing researchers’ confusing intelligence with style and trait with state.

In a different approach, Griffiths and İnceçay (2016) introduced learning style stretching, a concept that sounds close to simple strategic teaching. Even though their study did not adequately address evidence in the ways that Pashler et al. (2009) and Cuevas (2015) claimed were necessary for proving a learning styles’ existence, Griffiths and İnceçay’s (2016) work was of value simply because it supported the idea that learners can increase their learning and achievement when they step out of their style comfort zone and try to employ different styles with which to learn material. This idea was congruent with Gardner’s (2013) and Willingham et al.’s (2015) belief that learning different material requires the use of different learning methods and strategies that can be nourished and grown. Though Griffiths and İnceçay (2016) termed this style stretching, with only slight semantic alteration this could apply to abilities and traits. Also, Griffiths and İnceçay saw an increase in learning as per learners’ willingness to style stretch as well as noted that more successful learners employed this method more often, thus giving educators more incentive to support the growth of style (or abilities) stretching in learners.

What Cuevas (2015) as many researchers have done was forget Gardner’s (2013) own beliefs that many parts of the brain are involved in any activity. ”
abilities when they addressed the ongoing confusion of ability with style and countered those who looked at Gardner’s multiple intelligences as a support for learning styles, claiming that Gardner himself found this confusion inaccurate (as cited in Willingham, et al., 2015). Gardner claimed that his multiple intelligences theory, which is truly an ability theory, could not be used as support for learning styles’ existence and use because one cannot use one intelligence to understand another. To do math problems, for example, one must use math, not get through another form of cognition such as kinesthetic or musical ability. Or in another example, one could not use Microsoft Word to perform Excel functions (as cited in Willingham, et al., 2015).

Learning Styles Still Promoted

As an educational tool, learning styles are still promoted in numerous venues. For example, Stahl (1999) questioned learning styles as a valid construct and the general acceptance of it by educators in the K-12 setting in teaching reading, citing multiple studies ranging from 1978-1992 disproving the usefulness of teaching to learners’ preferred learning styles, the validity of the construct, and interventions based on learning style’s existence. In the field of postsecondary learning assistance, Dembo and Howard (2007) discouraged student success textbooks authors from their continued promotion of this construct, claiming no research-based benefit existed. Yet, learning styles topics are still pervasive within many of these textbooks and publisher-sponsored Internet support sites and learning labs.

The organization that certifies postsecondary tutoring training programs, the College Reading and Learning Association (CRLA), still includes training in learning styles and how to accommodate learners by using their learning styles when working with them. For the CRLA’s International Tutor Training Program Certification (ITTPC), the fourth certification element on the first level is “Adult learners, learning theory, and/or learning styles” (Schotka, Bennet-Bealer, Sheets, Stedje-Larsen, & Van Loon, 2014). Specifically, tutors are required to be familiar with different learning styles, especially those based in the visual, tactile/concrete, auditory learning domains and with tutoring strategies that are appropriate to use with students with different learning styles or preferences (Schotka, Bennet-Bealer, Sheets, Stedje-Larsen, & Van Loon, 2014). This requirement is still held though the effectiveness of tailoring tutoring and teaching to learning style preferences has been disproven (Pashler, 2009).

While the University of Missouri at Kansas City (UMKC), which officially grants International Certification of Supplemental Instruction (SI) programs, no longer stipulates that learning styles must be covered as part of certification, some certified SI programs still provide access to learning styles mate-
Teaching students the cognitive processes and skills involved in learning—those strategies that help learners think, solve problems, and create meaning—can similarly empower students, not with a false sense that one can learn only one or two ways, but with an understanding that learning is multifaceted, reflecting different combinations of learning abilities that make us effective in different ways.

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