Richard McConnell and Mike Benveniste

Narrative Creativity Training: A Case Study from the US Army

ABSTRACT: Though integral to thinking about causality, narrative—in particular narrative thinking—has been overlooked in traditional approaches to creativity studies and creative problem solving. Emphasizing the intrinsically speculative and causal aspects of narrative, this study investigates the effectiveness of narrative creativity training as a means of fostering innovative problem-solving skills within the US Army. Through two experiments conducted at the US Army Command and General Staff College, this research compares the outcomes of narrative training against conventional associational creativity training. Our results suggest that specifically narrative capacities are cognitively distinct, can be directly trained, and substantially improve problem solving. This research contributes to scholarship on the practical and empirical applications of narrative theory, as well as scholarship in creativity studies and creative problem solving, evincing the specific utility of narrative thinking in addressing complex, open-ended challenges.

KEYWORDS: *storythinking, narrative cognition, narrative thinking, creativity training, creativity studies, creative problem solving, causation, causality, counterfactual*

Mike Benveniste received his PhD in English from Stanford University; he is currently a lecturer at San Jose State University, and Lead Researcher for the Fletcher Lab at Project Narrative.

Richard A. McConnell is Full Professor of Tactics at the US Army Command and General Staff College, Ft. Leavenworth. He is a retired Lt. Col. and has published numerous articles on wargaming, creativity, exceptional information, and ethics related topics.

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Introduction: Why Train Creativity?

Creativity. It's celebrated in many an ancient artwork as a gift from the gods, even the essence of divinity itself. And its enormous value has been upheld by modern science, which has shown that creativity is not only a driver of cultural innovation—generating new technology, science, and medicine (Cropley and Oppert; Florida "America's Looming Creativity Crisis," *The Rise of the Creative Class*; Lee, Florida, and Gates; Nersessian)—but also a source of personal resilience, helping us respond to setbacks with fresh hopes and evolving plans (Álvarez-Huerta, Muela, and Larrea; Bandura; Fletcher, Enciso, and Benveniste; Lee and Portillo; Royston and Reiter-Palmon; Sagone and Caroli; Yates and Twigg).

This century, the demand for creativity and creative thinking skills has risen sharply, identified as a crucial competence by UNESCO's International Bureau of Education, and repeatedly occupying a prominent position near the top of the World Economic Forum Jobs Report's most in demand skills (Center for the New Economy and Society 2018, 2020, 2023; Pellegrino and Hilton; Florida "America's Looming Creativity Crisis," "The Flight of the Creative Class"; Marope, Griffin, and Gallagher). In 2023, "creative thinking" was ranked as the second most important core skill (with analytical thinking ranked first and resilience, flexibility, and agility third), and the skill most increasing in importance (Center for the New Economy and Society 2023); but the educational system has yet to successfully answer the demand for creativity, due both to lack of comprehensive implementation and to ineffective techniques (Grigorenko; Puccio and Lohiser; Soulé and Warrick). Worse, educators have grown increasingly concerned that our modern education system is *decreasing* the creativity of students (Henriksen, Creely, and Henderson; Kim "Creativity Crisis Update"; Land and Jarman; Sternberg; Sternberg and Kaufman) and, perhaps, precipitating a generational decline in creative ability (Kim "The Creativity Crisis," " The Creativity Crisis: It's Getting Worse"). Although the existence of a "creativity crisis"—a broad generational decline in student creativity—has recently been disputed (Barbot and Said-Metwaly), multiple studies support the conclusion that creativity declines with schooling (Cheung et al.; Coleman et al.; Genco, Hölttä-Otto, and Seepersad; Sola et al.; Torrance). Even subjects, such as design and engineering, that focus on nurturing creative problem solving have been unable to reverse the trend (Belski and Belski; Cropley; Sola et al.; Surovek and Rassati; Valentine et al.; Valentine, Belski, and Hamilton), and multiple interventions aimed specifically at augmenting creativity and creative problem solving through a focus on divergent thinking techniques have documented little, or no, effect on student performance (de Vink et al.; Gu et al.; Rao, Puranam, and Singh; Ritter et al.; van Broekhoven et al.).

To address this situation, educational researchers have proposed two broad solutions. The first is to enrich school with more opportunities for play (Boysen et al.; Cremin and Chappell). Play is the exercise of free imagination via improvisational games and other mind-wandering activities that occur spontaneously when students are given unstructured time with art supplies, playground toys, and theater props (Celume et al., "How Dialogic Space," "Fostering Children and Adolescents' Creative

Thinking"; Chylińska and Gut; Craft; Cremin, Burnard, and Craft; Evans; Goldstein; James and Nerantzi; Russ, "Pretend Play," "Mind Wandering"; Walker and Gopnik).

The second proposed solution is to provide students with creativity training (Ritter et al.; Ruiz-del-Pino, Fernández-Martín, and Arco-Tirado), which has been proven efficacious in adult learners (Ma; Scott, Leritz, and Mumford, "Types of Creativity Training," "The Effectiveness of Creativity Training"; Valgeirsdottir and Onarheim). Creativity training has existed since antiquity but has been codified in modern education into techniques such as divergent thinking, design thinking, and brainstorming (Scott, Leritz, and Mumford, "Types of Creativity Training," "The Effectiveness of Creativity Training"; Valgeirsdottir and Onarheim). Divergent thinking involves mixing and matching from distinct sets of existing ideas in order to generate new ideas through the synthesis, blending, or transposition of previously 'unconnected' ideas (Guilford, "Creativity"; Mednick, "The Associative Basis," "The Remote Associates Test"). Design thinking involves, abstracting the needs and wants of typical users to 'empathize' with them and thus to propose solutions to a given problem that the users will find satisfying (Brown and Katz; Kolko). Brainstorming involves the random access of memory, either by individuals or groups, in order to generate myriad ideas and to then selectively retain and do further work with the most promising ones. (Beaty and Kenett; Benedek et al.; Osborn). These techniques trace their popularity to the claim by J. P. Guilford, a founder of modern creativity studies, that brain functions are reducible to computational processes that can be assessed via standardized tests and algorithmic metrics, making them efficient to implement at scale (Guilford, "Creativity," "The Structure of Intellect," *The Nature of Human Intelligence*).

Both solutions have yielded positive results, yet neither has halted the decline of student creativity. The inclusion of play in school has allowed students to access their natural creativity, but it has not provided a method for enhancing that creativity. Furthermore, by associating creativity with art and recess, it has risked segregating creativity from STEM and real world problem solving. Meanwhile, current creativity training has evinced narrow and diminishing returns. Divergent thinking leads to significant improvements in semantic association but not innovation (Gu et al.; Ritter et al.; Sola et al.; van Broekhoven et al.); design thinking helps students refine existing products and processes but is not associated with major breakthroughs (Ackermann; Nussbaum); and brainstorming is demonstrably ineffective (Furnham; Mullen, Johnson, and Salas; Putman and Paulus). More recently, studies have revealed that divergent thinking's efficacy declines with use, evincing reduced novelty and number of unique ideas over time (Brucks and Huang; Gonthier and Besançon).

As a result, educational researchers have begun looking for new methods for improving creativity (Alves-Oliveira et al.; Barbot and Baer; Coleman et al.; Davies et al.; Genco, Hölttä-Otto, and Seepersad; Grigorenko; Ruiz-del-Pino, Fernández-Martín, and Arco-Tirado; Sola et al.), of which one candidate is narrative creativity training (Celume et al., "Fostering Children and Adolescents' Creative Thinking"; Fletcher, Enciso, and Benveniste; Fletcher and Benveniste; Lucchiari, Sala, and Vanutelli; Sagone et al.). Drawing upon the insight that causal, narrative thinking is cognitively distinct and thus capable of being targeted specifically (Fletcher and Benveniste), this

essay presents empirical findings that support this hypothesis, and identifies specific applications of narrative thinking that improve creative problem solving. The training that we designed and conducted with the US Army targeted aspects of narrative innovation, or narrating otherwise: emotional encouragement through self-emplotment (emphasizing aspects of identity or *whos* and *whats*); encountering and emulating alternative causes through shifts in perspective (*whys*); counter-factual thinking, or hypothesizing alternative causes through revised plotting (*what-ifs*). All of these techniques emphasized the causal nature of narrative thinking to expand participants' ability to imagine, envision, and entertain alternate causes-and-effects. The results of the study suggest that the intervention substantially improved participants' problem-solving abilities both in terms of novelty and of utility. These results corroborate our contention that narrative thinking is an integral, though oft overlooked, component of creativity training, generally, and creative problem solving, in particular.

Narrative Creativity Training

Children's play is often narrative: it involves role-play in which children imagine themselves as different characters; it takes places in storyworlds with rules of action that differ from our own; and it generates storylines that branch and evolve as new obstacles are overcome and fresh avenues explored (Craft; Cremin, Burnard, and Craft; Cremin, Chappell, and Craft; Russ, "Pretend Play").

This feature of childhood play reflects the deeper fact that human imagination is also frequently narrative. The brain's default mode network cogitates heavily in story, and mind-wandering involves mental speculation about alternative actions in which we invent new plots and plans that rewrite our previous history or enlarge our future paths (Abraham, "The Imaginative Mind," "The Wandering Mind"; Carroll). Such narrative activity can lead to escapism and magical thinking, but it can also be fruitful practically. Mind-wandering is an evolved biological process that contributes to problem-solving and innovation (Agnoli et al.; Craig, Ottaway, and Dewar; Leszczynski et al.; Teng and Lien; Yang and Wu); such contributions derive from the narrative operations of causal thinking and counterfactual thinking (Fabry and Kukkonen; Fletcher, Enciso, and Benveniste; Fletcher and Benveniste). Causal thinking is speculating *why*? It hypothesizes causes from effects and effects from causes. Counterfactual thinking is speculating *what if*? It modifies existing sequences of events to generate alternative consequences. Coupled together, causal and counterfactual thinking can sharpen and enlarge creativity. The sharpening occurs when causal thinking hypothesizes a potential cause-effect that counterfactual thinking tests; the enlargement occurs when counterfactual thinking draws on causal thinking to expand its range of motion, identifying broader possibilities for what can be effected and how (Fletcher, Enciso, and Benveniste; Fletcher and Benveniste).

Both forms of coupling can be encouraged by narrative art (Kukkonen, "Quixotic Reasoning," *Probability Designs*; Weisberg and Gopnik, "Pretense, Counterfactuals," "Which Counterfactuals Matter?"). When story characters engage in original behaviors, or when plots twist in directions unexpected, the brain is prompted to hypoth-

esize the *causes* of those surprising outcomes, which it does by imagining potential motives and world rules. The brain then tests its hypotheses by jumping forward to speculate: *What consequences would follow from those motives or rules?* Such jumping can hover on the margins of consciousness but can also be precisely articulated (as when, for example, we discuss with friends what we think will happen in next week's episode of a serial television drama). Either way, counterfactual thinking allows us to measure our guesses against what happens next or to contemplate what else could have been. If our guesses are correct, we can speculate with increased exactness on the plot's remaining events or lament unrealized possibilities. If our guesses are incorrect, we can refine, revise, or broaden our causal models—or prefer our models to the author's, exiting the published story to dream up fan fiction revisions.

When such processes occur during the consumption of fantastical tales, they may do little to improve our practical powers of creativity (Hopkins and Lillard; Richert and Schlesinger; Richert and Smith; Walker, Gopnik, and Ganea; Weisberg et al.). But when they occur during the consumption of finely psychologized narratives (e.g., George Eliot's *Middlemarch*), historical autobiographies (e.g., *The Personal Memoirs of Ulysses S. Grant*), or near term speculative fiction (e.g., Emily St. John Mandel's *Station Eleven*), they can help the brain stretch and sharpen its sense of what can happen and how. (Or, to use the term proposed by children's education researcher Anna Craft, such narratives can develop *possibility thinking*.)

While narrative art can support creativity, it also engages many brain processes that are indirectly related to creativity. Therefore, creativity can potentially be nurtured in a more targeted fashion via short narrative exercises that focus on the causal and counterfactual thinking loop and thereby strengthen and enlarge the brain processes that contribute to real world problem solving and innovation (Fletcher and Benveniste). Such narrative creativity is the general aptitude that underlies innovative action and problem solving, as well as narrative art and expression.

This proposed method of increasing student creativity has been tested [trialed] on small populations of students at high schools, colleges, and graduate programs in engineering, writing, and business. In those trials, it has been qualitatively assessed by expert instructors as highly effective. The training has, however, never been deployed and quantitatively assessed at scale. To explore the viability of such deployment and quantitative assessment, we therefore present the following case study, conducted at the US Army.

Targeting and Assessing Narrative Creativity Training: The US Army

The US Army does not enjoy a public reputation for creativity. But it strongly values creativity training, for two reasons. First, the US Army is employed by the US Government as a tool for solving complex, open-ended problems. The most obvious of those problems is war, which because it involves a breakdown of prior mechanisms for conflict resolution and because it takes the form of a dynamically adversarial

struggle, continually generates predicaments with life and death consequences. The US Army also engages many other problems—disaster response, humanitarian aid, nation building—that do not come with textbook solutions (Allen; Michaelson; Ruark, Blacksmith, and Wallace; Samosorn).

Second, the US Army must solve problems by drawing on its current labor pool. It cannot, unlike private industry, respond to changing environments by laying off staff sectors or by recruiting outside executives. Instead, it must retrain its existing workforce. Because retraining is a constant requirement, the Army places a premium on adaptability, personal growth, and other psychological characteristics that derive from creativity, making creativity training foundational to the Army's capacity to reinvent itself.

To supply that training, the Army's educational branch—Training and Doctrine Command (TRADOC), a 37-school command that oversees the annual training of more than 440,000 soldiers—has devised a "Creative Thinking" curriculum deployed across ranks, from enlisted special operators to senior medical officers. Consistent with conventional creativity training, the curriculum consists of divergent and design thinking, and as in other schools and organizations, the yields have been low, generating doubt and disaffection: *What if creativity is simply innate? What if organizations that value creativity should place their focus not on training but on recruitment and selection?*

In 2016, these concerns prompted the Army, at the behest of General Mark A. Milley, to undertake a search for new methods for training creativity across its broad range of specialties: Medical, Nursing, Dental, Legal, Finance, Engineering, Aviation, Logistics, Transportation Information Technology Systems (ITS), Police, Food Preparation and Delivery, Veterinary, Intelligence, Administration, Chaplain, Chemical, Infantry, Armor, Artillery, Special Operations, etc. In May 2021, that search motivated faculty at the US Army's Command and General Staff College (CGSC) to contact the MBA program in Entrepreneurship at the University of Chicago Booth School of Business. A Chicago Booth faculty member, Gregory Bunch, referred CGSC to Professor Angus Fletcher at Ohio State's Project Narrative, which was piloting narrative approaches to creativity on undergraduate and graduate students in Creative Writing, Engineering, and Business. Interested by the new approach, CGSC faculty proposed a research collaboration to develop a creativity curriculum that could (1) be used across Army ranks and specialties, (2) implemented at scale, and (3) assessed, with an ultimate view to making the training public so that it could be shared through the US education system, from elementary school through college.

The first result of the collaboration was *Creative Thinking: A Field Guide to Building Your Strategic Core,* a 30-unit workbook containing narrative exercises for increasing performance at solving novel, open-ended, complex problems. *Creative Thinking* was tested in qualitative trials run by individual CGSC faculty, and from there, was made available to the Department of Defense and private industry. Dozens of independent trials were launched, in domains from federal crisis response to healthcare to finance to aviation engineering.

Positive feedback from these initial efforts led to authorization of systematic implementation and assessment of the training across the Army's senior officer ranks.

The authorization was provided by Lieutenant General Theodore D. Martin and CGSC Dean Jack Kem. Implementation was placed in the hands of the CGSC faculty, who from May to August 2022, planned and executed a series of trials, including a large-scale study involving more than 250 Army majors, in fields from Nursing to Engineering to Special Operations. The trials are ongoing, but the initial findings are shared here, in the hope that they will encourage enlargement and refinement by other organizations.

All research has been designed, conducted, and analyzed by US Army personnel, led by Dr. Richard McConnell, under the Institutional Review Board of Dr. Michelle Miller. Narrative creativity training curriculum provided by Professor Angus Fletcher (Project Narrative), with the assistance of Senior Narrative Theorist Dr. Mike Benveniste (Fletcher Lab, Project Narrative).

Overall Research Design

The overall research design combined a small randomized controlled trial (to gauge the narrative training's effectiveness in comparison to current semantic and associational creativity training) with a large longitudinal trial (to measure the effectiveness of the narrative training at increasing creativity from baseline).

Creativity was assessed via a modified version of the Consensual Assessment Technique (CAT), the academic "gold standard" for assessing creativity (Amabile; Baer; Baer and Kaufmann). The CAT poses an open-ended problem, e.g., *How would you improve recruitment at your organization?* Answers to the problem are scored by a panel of judges, who are selected for their experience in solving similar problems. The CAT's main shortcoming is its propensity toward expert bias, that is, overvaluing minor innovations (which often seem unduly creative to experts) and undervaluing major innovations (which, because of their inherent unpredictability, often seem unfeasible and even incomprehensible to experts) (Fedyk and Xu; Licuanan, Dailey, and Mumford; Runco; Tsao, Ting, and Johnson). However, this shortcoming can be mitigated by having judges score two separate factors: *surprise at* the answer (which measures novelty, since an answer that surprises an expert is likely to be new) and *confidence in* the answer (which measures predictable utility, since an answer that generates confidence in an expert is likely to be readily implementable).

Army researchers employed a panel of four CAT judges and, at the guidance of CGSC Professor Kenneth Long, made two small modifications to the standard CAT. First, McConnell (Principle Investigator) and Long (CAT team lead) used a 7-point Likert scale, which Army personnel have found more effective than the usual 9-point scale. Second, they split utility into two factors, suitability and feasibility, which the Army has found more precise at evaluating whether a plan or technology will work (Field Manuel 5-0, Paragraph 5–141). *Suitability* measures the degree to which a plan or technology is appropriate to the task at hand. *Feasibility* measures the degree to which a plan or technology is expected to work within an operational budget and timeline.

Army faculty developed their own set of complex, open-ended questions for the CAT. For example: "The Army has committed to an all electric ground vehicle fleet by 2040. Describe how you would plan that transition." Other questions invited students to imagine how they might innovate education, healthcare, logistics, and IT.

Students for the study were recruited from the Army's multiple campuses of CGSC, a highly selective academic institution that trains Army captains and majors to serve in senior staff and leadership roles (as majors and lieutenant colonels). All participants supplied informed consent. In keeping with Army IRB policies, all participation was anonymous and pre- and post-training CATs were completed, independently, within a 72-hour window of training.

Narrative Creativity Training Curriculum

The narrative creativity training curriculum was based upon pre-existing training developed by faculty at Project Narrative for graduate students in engineering, healthcare, and business. It was adapted through the guidance of personnel from the Army Nurse Corps (MAJ Angela B. Samosorn, US Army Institute of Surgical Research) and US Army Special Operations (LTC Thomas L. Gaines, USASOC). Per guidance from Army instructors, it was devised as a two-hour course that could be automated via Powerpoint.

The narrative creativity training consisted of three elements:

1. *Emotional Encouragement.* Emotional encouragement (also known as attitude adjustment) is the use of verbal affirmation, scientific evidence, and other related techniques to nurture people's belief in their creativity. It works by bolstering creative self efficacy and has historically proved effective at improving creative performance (Ma; Nusbaum, Silvia, and Beaty; Plucker and Dow; Scott, Leritz, and Mumford, "Types of Creativity Training," "The Effectiveness of Creativity Training"). Existing Army training contains this element, so the new curriculum was designed to include a narrative version of emotional encouragement: students were invited to remember stories of when they, or the Army, had previously been creative.
2. *Perspective-Shifting.* Perspective-shifting occurs when an audience enters into the motives of a story character or narrator, anticipating how that character or narrator will act. This is a form of *causal thinking* or, colloquially, speculating *why.* To incorporate this activity into the new curriculum, students were tasked with solving a complex, open-ended problem—and were then asked to explain *why* they solved the problem as they did. After hearing each other's responses, students adopted the *why* of another student and applied it to solving a second problem. For example, after hearing how another student had deployed a near future technology to improve operations at their unit, they were asked to adopt the other student's perspective to

devise an original new future technology and envision its potential impact.

3. *Counterfactual Thinking.* Counterfactual thinking is altering a causal element of a narrative (for example, by inserting or removing a character, or by altering an existing character's action) and then performing a thought experiment to hypothesize the consequent effects. The colloquial term for this activity is *what-if* thinking. To incorporate it into the new curriculum, students were given an existing situation and tasked with proposing a small change (i.e., plot twist) that could have a large effect, over time. For example, after exploring how the Army's investment in the Wright brothers' 1909 Flyer impacted future military operations, they were asked to imagine a small change that could transform the global supply chain.

Experiment 1: Head-to-Head Comparison of Current and Narrative Training

Purpose: To run a randomized controlled trial comparing the effects of the US Army's current logic based creativity training with the effects of narrative based creativity training.

Method: A group of 20 US Army majors were recruited at CGSC, Ft. Belvoir. The recruited participants were from a variety of Army specializations, including healthcare, logistics, and special operations.

Participants were randomly assigned to two groups, narrative (n = 12) and control (n = 8). The control group received the Army's existing Creative Thinking curriculum, C122, a two-hour advanced course in divergent and design thinking. The narrative group received the new two-hour narrative curriculum. Instructors were trained directly, in person, by Angus Fletcher. Both groups had their creativity assessed pre and post via the Army's modified CAT.

Results: The students who received the narrative training improved significantly ($p < 0.01$) and substantially (Cohen's $d = 0.34$) against control. Novelty in the narrative group increased 16% from baseline. Suitability improved 10% from baseline. Feasibility improved 8.3% from baseline.

TABLE 1. Experiment 1

EXPERIMENT 1	N	NOVELTY	SUITABILITY	FEASIBILITY
Control	8	4.06 ± 0.27	3.81 ± 0.16	4.00 ± 0.14
Narrative	12	4.58 ± 0.2	4.04 ± 0.14	4.33 ± 0.11

Experiment 2: Implementing Narrative Training at Scale

Purpose: To determine whether the narrative training could be scaled at a CGSC campus with a larger population of students and instructors.

Method: Out of a student body of 660 US Army majors at CGSC, Ft. Leavenworth, 254 were randomly recruited to participate in the narrative training. Recruited participants included the full variety of Army specializations, from healthcare to logistics to special operations.

The same narrative training was used as in Experiment 1, but this time, the instructors were not directly trained by experts. Instead, they were provided with Powerpoint slides that automated the training. Slides 1–10 provided a five-minute history of creativity in the Army to motivate emotional engagement with the training. Slides 11–13 provided a warm-up exercise in causal and counterfactual thinking by asking students to, "Imagine a member of your unit. Now imagine something you could do to make them smile." Slides 14–17 ran students through a 30-minute exercise in perspective-shifting. Slide 18 provided students with a five-minute break. Slides 19–43 guided students through two counterfactual thinking exercises. Slides available from researchers upon request. A contrast group was recruited from the Army's current creativity curriculum, C122, but participation was too low for statistically significant comparison. Creativity was assessed pre and post via the Army's modified CAT.

Results: Participants showed significant ($p < .001$) and substantial (Cohen's $d = 0.93$) improvement in overall creative score. As in Experiment 1, novelty improved 16% from baseline. Suitability improved 18% from baseline. Feasibility improved 9% from baseline.

TABLE 2. Experiment 2

EXPERIMENT 2	N	NOVELTY	SUITABILITY	FEASIBILITY
Pre	179	3.84 ± 0.08	3.71 ± 0.07	3.84 ± 0.06
Post	179	4.51 ± 0.10	4.17 ± 0.07	4.18 ± 0.07

As an example of a solution that scored high in novelty (6.7), suitability (6), and feasibility, (5.7), scoring as a potential innovation, one student diagrammed how the Army's all electric 2040 ground fleet could have its battery supply coordinated by Space Force, combining machine learning with satellite GPS to optimize logistics. As an example of a solution that scored high in novelty (6.7) and uncertain in feasibility, indicating that it exceeded the experience of the judges and so was a potential moonshot, one student diagrammed how the Army could develop a wireless system that transmitted electricity from pop-up power plants to vehicles in the field.

Discussion of Results

The new narrative training was effective. Novelty improved from baseline, as did suitability and feasibility, suggesting that students improved at proposing new plans that fit with broader organizational requirements—and that had a chance to work.

The effective increase in creative problem-solving was large: Cohen's d = 0.93. This is almost a full standard deviation, the equivalent of a 14-point increase in IQ at solving complex, open-ended problems. Such a large increase, in such a short training session, is unlikely to reflect the training's effect on students' core creative potential. Instead, it is more plausibly a measure of how the training helped students access existing potential: prior to the training, students had been conditioned to focus on finding the right answer, but through the training, students were encouraged to explore *possible* answers and were provided with narrative tools for assisting with that exploration.

This analysis suggests that Army officers possess more creative potential than is currently accessed by their organizational culture, but that does not necessarily mean the culture is inappropriate. A great deal of the Army's responsibility is to execute precise and risky tasks—medical procedures, aviation repairs, ordinance disposal—that already have optimized solutions. Creative answers in such situations would be inadvisable and potentially lethal.

Nonetheless, the benefits of standard operating procedures exist in tension with the Army's responsibility for dealing with new problems where solutions have not been optimized—or even envisioned. To maximize the Army's capacity for problem-solving, its personnel must therefore toggle between two forms of psychological performance: (1) rigorously adhering to standard operating procedures when tasked with familiar problems and (2) rapidly transitioning to creative thinking when confronted with novel situations. The effectiveness of the narrative training at (2) suggests that it could be useful in the Army and other organizations that need to "hit the switch" from rule adherence to adaptive innovation.

This analysis does not preclude the possibility that narrative training could also increase base creative potential. Qualitative reports from individual teams at both CGSC and US Army Special Operations suggest that narrative training can have that effect. But the current study was not designed to investigate the veracity of such reports.

Conclusion

Narrative training proved effective and scalable at accessing, and perhaps increasing, student capacity for creative activity, as evaluated through research performed by personnel at the US Army Command and General Staff College. Narrative training is thus a potential resource for schools and organizations looking to increase creativity, whether to drive innovation, promote psychological resilience, or tackle the open-ended problems of life.

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Andrew Shoffner (Colonel Retired), research supervisor and research report manuscript review. Director, Command and General Staff College, Department of Command and Leadership. Former Armor Officer.

Jacob Mong (Lieutenant Colonel Retired), qualitative and quantitative data collection/collation and research report manuscript review. Command and General Staff College, Department of Army Tactics Assistant Professor. Former US Army Aviator.

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Works Cited

Abraham, Anna. 2018. "The Imaginative Mind." *Human Brain Mapping* 37.11 (2016): 4197–211. https://doi.org/10.1002/hbm.23300.

———. "The Wandering Mind: Where Imagination Meets Consciousness." *Journal of Consciousness Studies* 25.11–12 (2018): 34–52.

Ackermann, Rebecca. "Design Thinking Was Supposed to Fix the World. Where Did It Go Wrong?" *MIT Technology Review,* 9 February 2023. https://www.technologyreview.com/2023/02/09/1067821/design-thinking-retrospective-what-went-wrong/ (accessed 29 August 2023).

Agnoli, Sergio, Manila Vanucci, Claudia Pelagatti, and Giovanni Emanuele Corazza. "Exploring the Link Between Mind Wandering, Mindfulness, and Creativity: A Multidimensional Approach." *Creativity Research Journal* 30.1 (2018): 41–53. https://doi.org/10.1080/10400419.2018.1411423.

Allen, Charles D. *Creative Thinking for Individuals and Teams: An Essay on Creative Thinking for Military Professionals.* Carlisle Barracks, PA: US Army War College, 2009.

Álvarez-Huerta, Paula, Alexander Muela, and Iñaki Larrea. "Student Engagement and Creative Confidence Beliefs in Higher Education." *Thinking Skills and Creativity* 40 (June 2021): 100821. https://doi.org/10.1016/j.tsc.2021.100821.

Alves-Oliveira, Patrícia, Patrícia Arriaga, Carla Xavier, Guy Hoffman, and Ana Paiva. "Creativity Landscapes: Systematic Review Spanning 70 Years of Creativity Interventions for Children." *The Journal of Creative Behavior* 56.1 (2021): 16–40. https://doi.org/10.1002/jocb.514.

Amabile, Teresa M. "Social Psychology of Creativity: A Consensual Assessment Technique." *Journal of Personality and Social Psychology* 43.5 (1982): 997–1013.

Baer, John. "The Consensual Assessment Technique." In *Handbook of Research Methods on Creativity,* edited by Viktor Dorfler and Marc Stierand, 166–77. Northampton: Edward Elgar Publishing, 2020.

Baer, John, and J. Kaufmann. "Assessing Creativity with the Consensual Assessment Technique." In *The Palgrave Handbook of Social Creativity Research,* edited by Lebuda I. and Glăveanu V, 27–37. Cham: Palgrave Macmillan, 2019.

Bandura, Albert. "Self-Efficacy: The Foundation of Agency." In *Control of Human Behavior, Mental Processes, and Consciousness: Essays in Honor of the 60th Birthday of August Flammer,* edited by August Flammer, Walter J. Perrig, and Alexander Grob, 17–35. Mahwah: Lawrence Erlbaum Associates, 2000.

Barbot, Baptiste, and John Baer. "Creativity Doesn't Develop in a Vacuum." *New Directions for Child and Adolescent Development* 151 (March 2016): 9–20.

Barbot, Baptiste, and Sameh Said-Metwaly. "Is There Really a Creativity Crisis? A Critical Review and Meta-Analytic Re-Appraisal." *The Journal of Creative Behavior* 55.3 (2021): 696–709. https://doi.org/10.1002/jocb.483.

Beaty, Roger E., and Yoed N. Kenett. "Associative Thinking at the Core of Creativity." *Trends in Cognitive Sciences* 27.7 (2023): 671–83. https://doi.org/10.1016/j.tics.2023.04.004.

Belski, Iouri, and Regina Belski. 2018. "Are We Fit To Graduate Creative Professionals?" In *2018 IEEE International Conference on Teaching, Assessment, and Learning for Engineering (TALE),* 365–71. https://doi.org/10.1109/TALE.2018.8615357.

Benedek, Mathias, Roger E. Beaty, Daniel L. Schacter, and Yoed N. Kenett. "The Role of Memory in Creative Ideation." *Nature Reviews Psychology* 2.4 (2023): 246–57. https://doi.org/10.1038/s44159-023-00158-z.

Boysen, Mikkel Snorre Wilms, Merete Cornét Sørensen, Hanne Jensen, Jesper Von Seelen, and Helle-Marie Skovbjerg. "Playful Learning Designs in Teacher Education and Early Childhood Teacher Education: A Scoping Review." *Teaching and Teacher Education* 120 (December 2022): 103884. https://doi.org/10.1016/j.tate.2022.103884.

Broekhoven, Kim van, Barbara Belfi, Ian Hocking, and Rolf van der Velden. "Fostering University Students' Idea Generation and Idea Evaluation Skills with a Cognitive-Based Creativity Training." *Creativity. Theories—Research—Applications* 7.2 (2020): 284–308. https://doi.org/10.2478/ctra-2020-0015.

Brown, Tim, and Barry Katz. "Change by Design." *Journal of Product Innovation Management* 28.3 (2011): 381–83. https://doi.org/10.1111/j.1540-5885.2011.00806.x.

Brucks, Melanie S., and Szu-Chi Huang. "Does Practice Make Perfect? The Contrasting Effects of Repeated Practice on Creativity." *Journal of the Association for Consumer Research* 5.3 (2020): 291–301. https://doi.org/10.1086/709174.

Carroll, Joseph. "Imagination, the Brain's Default Mode Network, and Imaginative Verbal Artifacts." In *Evolutionary Perspectives on Imaginative Culture,* edited by Joseph Carroll, Mathias Clasen, and Emelie Jonsson, 31–52. Cham: Springer International Publishing, 2020. https://doi.org/10.1007/978-3-030-46190-4_2.

Celume, Macarena-Paz, Maud Besançon, and Franck Zenasni. "Fostering Children and Adolescents' Creative Thinking in Education. Theoretical Model of Drama Pedagogy Training." *Frontiers in Psychology* 9 (2019). https://www.frontiersin.org/articles/10.3389/fpsyg.2018.02611.

———. 2019. "How a Dialogic Space Can Impact Children's Creativity and Mood Valence in Drama Pedagogy Training: Study with a French 4th Grade Sample." *Thinking Skills and Creativity* 33 (September): 100576. https://doi.org/10.1016/j.tsc.2019.100576.

Center for the New Economy and Society. "World Economic Forum: The Future of Jobs Report 2018." World Economic Forum, 2018. https://www3.weforum.org/docs/WEF_Future_of_Jobs_2018.pdf.

———. "World Economic Forum: The Future of Jobs Report 2020." World Economic Forum, 2020. https://www3.weforum.org/docs/WEF_Future_of_Jobs_2018.pdf.

———. "World Economic Forum: The Future of Jobs Report 2023." World Economic Forum, 2023. https://www3.weforum.org/docs/WEF_Future_of_Jobs_2018.pdf.

Cheung, Chau-Kiu, Elisabeth Rudowicz, Xiaodong Yue, and Anna S. F. Kwan. "Creativity of University Students: What Is the Impact of Field and Year of Study?" *The Journal of Creative Behavior* 37.1 (2003): 42–63. https://doi.org/10.1002/j.2162-6057.2003.tb00825.x.

Chylińska, Monika, and Arkadiusz Gut. "Pretend Play as a Creative Action: On the Exploratory and Evaluative Features of Children's Pretense." *Theory & Psychology* 30.4 (2020): 548–66. https://doi.org/10.1177/0959354320931594.

Coleman, Emma, Tripp Shealy, Jacob Grohs, and Allison Godwin. "Design Thinking among First-Year and Senior Engineering Students: A Cross-Sectional, National Study Measuring Perceived Ability." *Journal of Engineering Education* 109.1 (2020): 72–87. https://doi.org/10.1002/jee.20298.

Craft, Anna. "Possibility Thinking: From What Is to What Might Be." In *The Routledge International Handbook of Research on Teaching Thinking,* edited by Rupert Wegerif and Li Li, 153–57. London: Routledge, 2015.

Craig, Michael, Georgina Ottaway, and Michaela Dewar. "Rest on It: Awake Quiescence Facilitates Insight." *Cortex* 109 (December 2018): 205–14. https://doi.org/10.1016/j.cortex.2018.09.009.

Cremin, Teresa, Pamela Burnard, and Anna Craft. "Pedagogy and Possibility Thinking in the Early Years." *Thinking Skills and Creativity* 1.2 (2006): 108–19. https://doi.org/10.1016/j.tsc.2006.07.001.

Cremin, Teresa, and Kerry Chappell. "Creative Pedagogies: A Systematic Review." *Research Papers in Education* 36.3 (2021): 299–331. https://doi.org/10.1080/02671522.2019.1677757.

Cremin, Teresa, Kerry Chappell, and Anna Craft. "Reciprocity between Narrative, Questioning and Imagination in the Early and Primary Years: Examining the Role of Narrative in Possibility Thinking." *Thinking Skills and Creativity* 9 (August 2013): 135–51. https://doi.org/10.1016/j.tsc.2012.11.003.

Cropley, David H. "Promoting Creativity and Innovation in Engineering Education." *Psychology of Aesthetics, Creativity, and the Arts* 9 (2015): 161–71. https://doi.org/10.1037/aca0000008.

Cropley, David H., and Michelle L. Oppert. "Chapter 2—The Fuzzy Front-End? How Creativity Drives Organizational Innovation." In *Individual Creativity in the Workplace,* edited by Roni

Reiter-Palmon, Victoria L. Kennel, and James C. Kaufman, 35–51. New York: Academic Press, 2018. https://doi.org/10.1016/B978-0-12-813238-8.00002-4.

Davies, Dan, Divya Jindal-Snape, Chris Collier, Rebecca Digby, Penny Hay, and Alan Howe. "Creative Learning Environments in Education—A Systematic Literature Review." *Thinking Skills and Creativity* 8 (April 2013): 80–91. https://doi.org/10.1016/j.tsc.2012.07.004.

Evans, Natalie Sarah. "Investigating the Impact of Playful Learning on Curiosity and Divergent Thinking." PhD diss., Temple University, 2021. https://www.proquest.com/docview/2572581487/abstract/C4E07A3B2A734B80PQ/1.

Fabry, Regina E., and Karin Kukkonen. "Reconsidering the Mind-Wandering Reader: Predictive Processing, Probability Designs, and Enculturation." *Frontiers in Psychology* 9 (2019). https://www.frontiersin.org/articles/10.3389/fpsyg.2018.02648.

Fedyk, Mark, and Fei Xu. 2021. "Creativity as Potentially Valuable Improbable Constructions." *European Journal for Philosophy of Science* 11.1 (2021): 27. https://doi.org/10.1007/s13194-020-00343-4.

Fletcher, Angus, and Mike Benveniste. "A New Method for Training Creativity: Narrative as an Alternative to Divergent Thinking." *Annals of the New York Academy of Sciences* 1512.1 (2022): 29–45. https://doi.org/10.1111/nyas.14763.

Fletcher, Angus, Patricia Enciso, and Mike Benveniste. "Narrative Creativity Training: A New Method for Increasing Resilience in Elementary Students." *Journal of Creativity* 33.3 (2023): 100061. https://doi.org/10.1016/j.yjoc.2023.100061.

Florida, Richard. "America's Looming Creativity Crisis." *IEEE Engineering Management Review* 33.1 (2005): 105. https://doi.org/10.1109/EMR.2005.25181.

———. "The Flight of the Creative Class: The New Global Competition for Talent." *Liberal Education* 92.3 (2006): 22–29.

———. *The Rise of the Creative Class.* New York: Basic Books. 2019.

Furnham, Adrian. "The Brainstorming Myth." *Business Strategy Review* 11.4 (2000): 21–28. https://doi.org/10.1111/1467-8616.00154.

Genco, Nicole, Katja Hölttä-Otto, and Carolyn Conner Seepersad. "An Experimental Investigation of the Innovation Capabilities of Undergraduate Engineering Students." *Journal of Engineering Education* 101.1 (2012): 60–81. https://doi.org/10.1002/j.2168-9830.2012.tb00041.x.

Goldstein, Thalia R. "Developing a Dramatic Pretend Play Game Intervention." *American Journal of Play* 10.3 (2018): 290–308.

Gonthier, Corentin, and Maud Besançon. "It Is Not Always Better to Have More Ideas: Serial Order and the Trade-off between Fluency and Elaboration in Divergent Thinking Tasks." *Psychology of Aesthetics, Creativity, and the Arts* (April 2022) https://doi.org/10.1037/aca0000485.

Grigorenko, Elena L. "Creativity: A Challenge for Contemporary Education." *Comparative Education* 55.1 (2019): 116–32. https://doi.org/10.1080/03050068.2018.1541665.

Gu, Xiaojing, Simone M. Ritter, Lea R. Delfmann, and Ap Dijksterhuis. "Stimulating Creativity: Examining the Effectiveness of Four Cognitive-Based Creativity Training Techniques." *The Journal of Creative Behavior* 56.3 (2022): 312–27. https://doi.org/10.1002/jocb.531.

Guilford, J. P. "Creativity: American Psychologist." *American Psychologist* 5.9 (1950): 444–54.

———. *The Nature of Human Intelligence.* New York: McGraw-Hill, 1967.

———. "The Structure of Intellect." *Psychological Bulletin* 53.4 (1956): 267–93. https://doi.org/10.1037/h0040755.

Henriksen, Danah, Edwin Creely, and Michael Henderson. "Failing in Creativity: The Problem of Policy and Practice in Australia and the United States." *Kappa Delta Pi Record* 55.1 (2019): 4–10. https://doi.org/10.1080/00228958.2019.1549429.

Hopkins, Emily J., and Angeline S. Lillard. "The Magic School Bus Dilemma: How Fantasy Affects Children's Learning from Stories." *Journal of Experimental Child Psychology* 210 (October 2021): 105212. https://doi.org/10.1016/j.jecp.2021.105212.

James, Alison, and Chrissi Nerantzi, eds. *The Power of Play in Higher Education: Creativity in Tertiary Learning.* Cham: Springer International Publishing, 2019. https://doi.org/10.1007/978-3-319-95780-7.

Kim, Kyung Hee. "The Creativity Crisis: It's Getting Worse." *Idea to Value.* 28 April 2017. https://www.ideatovalue.com/crea/khkim/2017/04/creativity-crisis-getting-worse/. (accessed 20 October 2021).

———. "The Creativity Crisis: The Decrease in Creative Thinking Scores on the Torrance Tests of Creative Thinking." *Creativity Research Journal* 23.4 (2011): 285–95. https://doi.org/10.1080/10400419.2011.627805.

———. "Creativity Crisis Update: America Follows Asia in Pursuing High Test Scores Over Learning." *Roeper Review* 43.1 (2021): 21–41. https://doi.org/10.1080/02783193.2020.1840464.

Kolko, Jon. *Well-Designed: How to Use Empathy to Create Products People Love.* Cambridge: Harvard Business Review Press, 2014.

Kukkonen, Karin. "Quixotic Reasoning: Counterfactuals, Causation and Literary Storyworlds." *Paragraph* 37.1 (2014): 47–61. https://doi.org/10.3366/para.2014.0109.

———. *Probability Designs: Literature and Predictive Processing.* Oxford: Oxford Univ. Press, 2020.

Land, George, and Beth Jarman. *Breakpoint and Beyond: Mastering the Future Today.* New York: Harper Business, 1993.

Lee, Jae Hwa, and Margaret Portillo. "Transferability of Creative Self-Belief across Domains:The Differential Effects of a Creativity Course for University Students." *Thinking Skills and Creativity* 43 (March 2022): 100996. https://doi.org/10.1016/j.tsc.2021.100996.

Lee, Sam Youl, Richard Florida, and Gary Gates. "Innovation, Human Capital, and Creativity." *International Review of Public Administration* 14.3 (2010): 13–24. https://doi.org/10.1080/12294659.2010.10805158.

Leszczynski, Marcin, Leila Chaieb, Thomas P. Reber, Marlene Derner, Nikolai Axmacher, and Juergen Fell. "Mind Wandering Simultaneously Prolongs Reactions and Promotes Creative Incubation." *Scientific Reports* 7.1 (2017): 10197. https://doi.org/10.1038/s41598-017-10616-3.

Licuanan, Brian F., Lesley R. Dailey, and Michael D. Mumford. "Idea Evaluation: Error in Evaluating Highly Original Ideas." *The Journal of Creative Behavior* 41 (2007): 1–27.

Lucchiari, Claudio, Paola Maria Sala, and Maria Elide Vanutelli. "The Effects of a Cognitive Pathway to Promote Class Creative Thinking. An Experimental Study on Italian Primary School Students." *Thinking Skills and Creativity* 31 (March 2019): 156–66. https://doi.org/10.1016/j.tsc.2018.12.002.

Ma, Hsen-Hsing. "A Synthetic Analysis of the Effectiveness of Single Components and Packages in Creativity Training Programs." *Creativity Research Journal* 18.4 (2006): 435–46. https://doi.org/10.1207/s15326934crj1804_3.

Marope, Mmantsetsa, Patrick Griffin, and Carmel Gallagher. "Future Competences and the Future of Curriculum: A Global Reference for Curricula Transformation." Paris: International Bureau of Education (UNESCO), 2017. https://www.ibe.unesco.org/sites/default/files/resources/future_competences_and_the_future_of_curriculum.pdf.

Mednick, Sarnoff. "The Associative Basis of the Creative Process." *Psychological Review* 69.3 (1962): 220–32. https://doi.org/10.1037/h0048850.

Mednick, Sarnoff A. 1968. "The Remote Associates Test." *The Journal of Creative Behavior* 2 (3): 213–14. https://doi.org/10.1002/j.2162-6057.1968.tb00104.x.

Michaelson, Sean P. "Fostering Creative Thinking within the U.S. Army Command and General Staff Officers' Course Curriculum." Master's thesis, U.S. Army Command and General Staff College, 2016.

Mullen, Brian, Craig Johnson, and Eduardo Salas. "Productivity Loss in Brainstorming Groups: A Meta-Analytic Integration." *Basic and Applied Social Psychology* 12.1 (1991): 3–23. https://doi.org/10.1207/s15324834basp1201_1.

Nersessian, Nancy J. *Creating Scientific Concepts.* Cambridge: MIT Press, 2008.

Nusbaum, Emily C., Paul J. Silvia, and Roger E. Beaty. "Ready, Set, Create: What Instructing People to 'Be Creative' Reveals about the Meaning and Mechanisms of Divergent Thinking." *Psychology of Aesthetics, Creativity, and the Arts* 8.4 (2014): 423–32. https://doi.org/10.1037/a0036549.

Nussbaum, Bruce. 2011. "Design Thinking Is A Failed Experiment. So What's Next?" Fast Company. April 5, 2011. https://www.fastcompany.com/1663558/design-thinking-is-a-failed-experiment-so-whats-next (accessed 28 September 2021).

Osborn, Alexander Faickney. *Applied Imagination: Principles and Procedures of Creative Problem-Solving.* New York: Scribner, 1963.

Pellegrino, James W. and Margaret L. Hilton, *Education for Life and Work: Developing Transferable Knowledge and Skills in the 21st Century.* Washington, D.C.: National Academies Press, 2012. https://doi.org/10.17226/13398.

Plucker, Jonathan A., and Gayle T. Dow. "Attitude Change as the Precursor to Creativity Enhancement." In *Nurturing Creativity in the Classroom,* 2nd ed., edited by Ronald A. Beghetto and James C. Kaufman, 190–211. Cambridge: Cambridge Univ. Press, 2017. https://doi.org/10.1017/9781316212899.013.

Puccio, Gerard J, and Amanda Lohiser. "The Case for Creativity in Higher Education: Preparing Students for Life and Work in the 21st Century." *Kindai Management Review* 8 (2020): 30–47.

Putman, Vicky L., and Paul B. Paulus. "Brainstorming, Brainstorming Rules and Decision Making." *The Journal of Creative Behavior* 43.1 (2009): 29–40. https://doi.org/10.1002/j.2162-6057.2009.tb01304.x.

Rao, Hayagreeva, Phanish Puranam, and Jasjit Singh. "Does Design Thinking Training Increase Creativity? Results from a Field Experiment with Middle-School Students." *Innovation* 24.2 (2022): 315–32. https://doi.org/10.1080/14479338.2021.1897468.

Richert, Rebekah A., and Molly A. Schlesinger. "Relations between Fantasy and Transfer of Learning from Storybooks." *Journal of Experimental Child Psychology* 222 (October 2022): 105474. https://doi.org/10.1016/j.jecp.2022.105474.

Richert, Rebekah A., and Erin I. Smith. "Preschoolers' Quarantining of Fantasy Stories: Preschoolers' Quarantining of Fantasy Stories." *Child Development* 82.4 (2011): 1106–19. https://doi.org/10.1111/j.1467-8624.2011.01603.x.

Ritter, Simone M., Xiaojing Gu, Maurice Crijns, and Peter Biekens. "Fostering Students' Creative Thinking Skills by Means of a One-Year Creativity Training Program." *PLOS ONE* 15.3 (2020): e0229773. https://doi.org/10.1371/journal.pone.0229773.

Royston, Ryan, and Roni Reiter-Palmon. "Creative Self-Efficacy as Mediator between Creative Mindsets and Creative Problem-Solving." *The Journal of Creative Behavior* 53.4 (2019): 472–81. https://doi.org/10.1002/jocb.226.

Ruark, Gregory A., Nikki Blacksmith, and Lee Spencer Wallace. "The Role of Creative Capacity in the 21st Century Army." In *Individual Creativity in the Workplace,* edited by J. C. Kaufman and R. Reiter-Palmon, 371–89. United Kingdom: Elsevier Academic Press, 2018. https://doi.org/10.1016/B978-0-12-813238-8.00016-4.

Ruiz-del-Pino, Blanca, Francisco D. Fernández-Martín, and José L. Arco-Tirado. "Creativity Training Programs in Primary Education: A Systematic Review and Meta-Analysis." *Thinking Skills and Creativity* 46 (December 2022): 101172. https://doi.org/10.1016/j.tsc.2022.101172.

Runco, Mark A. 2020. "Subjectivity in Creativity Research." In *Handbook of Research Methods on Creativity,* edited by Viktor Dorfler and Marc Stierand, 27–45. Northampton: Edward Elgar Publishing, 2020.

Russ, Sandra W. "Chapter 10—Mind Wandering, Fantasy, and Pretend Play: A Natural Combination." In *Creativity and the Wandering Mind,* edited by David D. Preiss, Diego Cosmelli, and James C. Kaufman, 231–48. London: Academic Press, 2020. https://doi.org/10.1016/B978-0-12-816400-6.00010-9.

———."Pretend Play: Antecedent of Adult Creativity." *New Directions for Child and Adolescent Development* 151 (March 2016): 21–32. https://doi.org/10.1002/cad.20154.

Sagone, Elisabetta, and Maria Elvira De Caroli. "'Yes . . . I can': Psychological Resilience and Self-Efficacy in Adolescents." *Revista INFAD de Psicología. International Journal of Developmental and Educational Psychology.* 1.1 (2016): 141–48. https://doi.org/10.17060/ijodaep.2016.n1.v1.240.

Sagone, Elisabetta, Maria Elvira De Caroli, Rossella Falanga, and Maria Luisa Indiana. "Resilience and Perceived Self-Efficacy in Life Skills from Early to Late Adolescence." *International Journal of Adolescence and Youth* 25.1 (2020): 882–90. https://doi.org/10.1080/02673843.2020.1771599.

Samosorn, Angela B. "How Creativity Is Integrated in the United States Army War College Curriculum as Told by Faculty: A Qualitative Case Study." Master's thesis, Fort Leavenworth, KS: U.S. Army Command and General Staff College, 2021.

Scott, Ginamarie, Lyle E. Leritz, and Michael D. Mumford. "The Effectiveness of Creativity Training: A Quantitative Review." *Creativity Research Journal* 16.4 (2004): 361–88.

———. "Types of Creativity Training: Approaches and Their Effectiveness." *The Journal of Creative Behavior* 38.3 (2004): 149–79. https://doi.org/10.1002/j.2162-6057.2004.tb01238.x.

Sola, Eric, Robert Hoekstra, Stephen Fiore, and Pamela McCauley. "An Investigation of the State of Creativity and Critical Thinking in Engineering Undergraduates." *Creative Education* 8.9 (2017): 1495–522. https://doi.org/10.4236/ce.2017.89105.

Soulé, Helen, and Tatyana Warrick. "Defining 21st Century Readiness for All Students: What We Know and How to Get There." *Psychology of Aesthetics, Creativity, and the Arts* 9.2 (2015): 178–86. https://doi.org/10.1037/aca0000017.

Sternberg, Robert J. "Teaching for Creativity: The Sounds of Silence." *Psychology of Aesthetics, Creativity, and the Arts* 9 (2015): 115–17. https://doi.org/10.1037/aca0000007.

Sternberg, Robert J., and James C. Kaufman. "Societal Forces That ERODE Creativity." *Teachers College Record: The Voice of Scholarship in Education* 120.5 (2018): 1–18. https://doi.org/10.1177/016146811812000505.

Surovek, A. E., and G. A. Rassati. "Is Structural Engineering Education Creating Barriers to Innovation and Creativity." *Proceedings of the 6th Structural Engineers World Congress,* 2017. https://par.nsf.gov/biblio/10228538-structural-engineering-education-creating-barriers-innovation-creativity.

Teng, Shan-Chuan, and Yunn-Wen Lien. "Propensity or Diversity? Investigating How Mind Wandering Influences the Incubation Effect of Creativity." *PLOS ONE* 17.4 (2022): e0267187. https://doi.org/10.1371/journal.pone.0267187.

Torrance, E. Paul. "A Longitudinal Examination of the Fourth Grade Slump in Creativity." *Gifted Child Quarterly* 12.4 (1968): 195–99. https://doi.org/10.1177/001698626801200401.

Tsao, J. Y., C. L. Ting, and C. M. Johnson. "Creative Outcome as Implausible Utility." *Review of General Psychology* 23.3 (2019): 279–92. https://doi.org/10.1177/1089268019857929.

Valentine, Andrew, Iouri Belski, and Margaret Hamilton. 2018. "Development of Creativity of Engineering Students: A Cause for Concern?" Paper presented at the 2018 ASEE Annual Conference & Exposition, June 2018, Salt Lake City, Utah. https://peer.asee.org/development-of-creativity-of-engineering-students-a-cause-for-concern.

Valentine, Andrew, Iouri Belski, Margaret Hamilton, and Scott Adams. "Creativity in Electrical Engineering Degree Programs: Where Is the Content?" *IEEE Transactions on Education* 62.4 (2019): 288–96. https://doi.org/10.1109/TE.2019.2912834.

Valgeirsdottir, Dagny, and Balder Onarheim. "Studying Creativity Training Programs: A Methodological Analysis." *Creativity and Innovation Management* 26.4 (2017): 430–39. https://doi.org/10.1111/caim.12245.

Vink, Isabelle C. de, Robin H. Willemsen, Ronald Keijzer, Ard W. Lazonder, and Evelyn H. Kroesbergen. "Supporting Creative Problem Solving in Primary Geometry Education." *Thinking Skills and Creativity* 48 (June 2023): 101307. https://doi.org/10.1016/j.tsc.2023.101307.

U.S. Army Field Manual (FM 5-0). Planning and Orders Production, Washington DC: U.S. Government Printing Office, May 2022.

Walker, Caren M., and Alison Gopnik. 2013. "Pretense and Possibility—A Theoretical Proposal about the Effects of Pretend Play on Development: Comment on Lillard et Al." *Psychological Bulletin* 139.1 (2013): 40–44. https://doi.org/10.1037/a0030151.

Walker, Caren M., Alison Gopnik, and Patricia A. Ganea. "Learning to Learn From Stories: Children's Developing Sensitivity to the Causal Structure of Fictional Worlds." *Child Development* 86.1 (2015): 310–18. https://doi.org/10.1111/cdev.12287.

Weisberg, Deena S., and Alison Gopnik. "Pretense, Counterfactuals, and Bayesian Causal Models: Why What Is Not Real Really Matters." *Cognitive Science* 37.7 (2013): 1368–81. https://doi.org/10.1111/cogs.12069.

Weisberg, Deena Skolnick, Paul Bloom, David M. Sobel, and Joshua Goodstein. 2013. "Young Children Are Reality-Prone When Thinking about Stories." *Journal of Cognition and Culture* 13.3–4 (2013): 383–407. https://doi.org/10.1163/15685373-12342100.

Weisberg, Deena Skolnick, and Alison Gopnik. "Which Counterfactuals Matter? A Response to Beck." *Cognitive Science* 40.1 (2016): 257–59. https://doi.org/10.1111/cogs.12241.

Yang, Tianchen, and Guohong Wu. "Spontaneous or Deliberate: The Dual Influence of Mind Wandering on Creative Incubation." *The Journal of Creative Behavior* 56.4 (2022): 584–600. https://doi.org/10.1002/jocb.553.

Yates, Ellen, and Emma Twigg. "Developing Creativity in Early Childhood Studies Students." *Thinking Skills and Creativity* 23 (March 2017): 42–57. https://doi.org/10.1016/j.tsc.2016.11.001.

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