THE PLAN

➤ A vision of tenacious learners
➤ The What, How, and Why of tenacious learning
➤ Developing Learning Mindsets
  ➤ Purpose
  ➤ Growth Mindset
  ➤ Belonging

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REMEMBER AND SHARE

➤ Recall a time you learned something that was a stretch
➤ …and a time that you failed to master, or even attempt, something where others succeeded.
➤ Share and discuss: what’s the difference?

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LEARNING IS ABOUT MORE THAN KNOWLEDGE & SKILLS
TO DRIVE LEARNING

What do you expect?
TO DRIVE LEARNING

What do you expect?

Academic Tenacity
Mindsets and Skills that Promote Long-Term Learning

Carol S. Dweck | Gregory M. Walton | Geoffrey L. Cohen
Foundations for Young Adult Success
A Developmental Framework
Early Childhood (Preschool, Ages 3-5)
- Agency
- Knowledge and Skills
- Self-Regulation
- Mindsets
- Competencies
- Concreteness
- Conceptualization
- Values

Middle Childhood (Elementary School, Ages 6-10)
- Agency
- Knowledge and Skills
- Self-Regulation
- Mindsets
- Competencies
- Abstraction
- Conceptualization
- Values

Middle Adolescence (High School, Ages 15-18)
- Agency
- Knowledge and Skills
- Self-Regulation
- Mindsets
- Competencies
- Individuation
- Identity
- Values

Early Adolescence (Middle Grades, Ages 11-14)
- Agency
- Knowledge and Skills
- Self-Regulation
- Mindsets
- Competencies
- Group-based Identity
- Values

Emergence of Key Factors: Young Adulthood (Postsecondary, Ages 19-22)
- Agency
- Knowledge and Skills
- Self-Regulation
- Mindsets
- Competencies
- Integrated Identity
- Values

KEY
- Ongoing Development
- Emergence of Key Factors
- Foundational Components

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Funded by The Wallace Foundation
Relative Changes in Employment Share by Occupation Task Intensity

1980 to 2012

Change in Employment Share Relative to 1980

-0.5
-0.4
-0.3
-0.2
-0.1
0
0.1
0.2
0.3
0.4
0.5

1980
1990
2000
2010

Low Math, Low Social
Low Math, High Social
High Math, Low Social
High Math, High Social

Occupational Task Intensity based on 1998 O*NET


David Deming, HGSE Professor of Education and Economics
PRESCHOOL SKILLS

They still matter

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ORGANIZING LEARNER CHARACTERISTICS

Aptitude Treatment Interaction

INSTRUCTIONAL PSYCHOLOGY: APTITUDE, ADAPTATION, AND ASSESSMENT

Richard E. Snow and Judy Swanson
School of Education, Stanford University, Stanford, California 94305

KEY WORDS: learning and individual differences, tutoring, grouping for instruction

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INTRODUCTION

Instructional psychology narrowly defined is the science of human learning in situations explicitly designed to promote it; its goals are to understand knowledge and skill acquisition and to devise principles of effective instructional
THE LEARNER VARIABLES (APTITUDES)

Snow & Swanson
➤ Cognitive
➤ Conative
➤ Affective

Shute & Zapata-Rivera
➤ Cognitive
➤ Metacognitive
➤ Affective
➤ Additional

UDL
➤ Recognition
➤ Strategic
➤ Affective

Variables vary - contextual and temporal

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UDL EXPERT LEARNER FRAMEWORK

**Resourceful & knowledgeable**
- Bring considerable prior knowledge to new learning
- Activate that prior knowledge to identify, organize, prioritize, and assimilate new information
- Recognize the tools and resources that would help them find, structure, and remember new information
- Know how to transform new information into meaningful and useable knowledge

**Strategic & goal-directed**
- Formulate plans for learning
- Devise effective strategies and tactics to optimize learning
- Organize resources and tools to facilitate learning
- Monitor their progress
- Recognize their own strengths and weaknesses as learners
- Abandon plans and strategies that are ineffective

**Purposeful & motivated**
- Are eager for new learning and are motivated by the mastery of learning itself
- Are goal-directed in their learning
- Know how to set challenging learning goals for themselves
- Know how to sustain the effort and resilience that reaching those goals will require
- Monitor and regulate emotional reactions that would be impediments or distractions to their successful learning
THE BRAIN’S NETWORKS FOR EXPERT, SKILLFUL LEARNERS

Universal Design for Learning

Recognition Networks
The “what” of learning

Strategic Networks
The “how” of learning

Affective Networks
The “why” of learning

How we gather facts and categorize what we see, hear, and read. Identifying letters, words, or an author’s style are recognition tasks.

Planning and performing tasks. How we organize and express our ideas. Writing an essay or solving a math problem are strategic tasks.

How learners get engaged and stay motivated. How they are challenged, excited, or interested. These are affective dimensions.

source: CAST.org
LEARNERS VARY IN

WHAT they know and can do

- General knowledge and vocabulary
- Domain knowledge
- Procedural skills
- Technical and research skills
- Domain analysis

HOW they manage their learning

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Executive Function: Implications for Education

Authors
Philip David Zelazo
Clancy B. Blair
Michael T. Willoughby

National Center for Education Research (NCER)
Meredith Larson (Project Officer)

Erin Higgins
National Center for Special Education Research (NCSER)
Amy Sussman

NCER 2017-2000

U.S. DEPARTMENT OF EDUCATION

Temperment and Personality
These EF skills are more often displayed by individuals with the following temperamental or personality characteristics:
- Effortful Control
- Conscientiousness
- Openness
- Grit

Goal-Directed Behavior
These EF skills are needed for the following examples of goal-directed behavior:
- Self-Control
- Reflective Learning
- Deliberate Problem Solving
- Emotion Regulation
- Persistence
- Planning

Near Synonyms of EF include: Cognitive Control, Executive Attention, Executive Control, Executive Functioning, and Fluid Abilities
LEARNERS VARY IN

**WHAT they know and can do**
- Phonological Awareness
- Oral language
- Fluency
- Vocabulary
- Comprehension
- Instructional strategies

**HOW they manage their learning**
- Attention
- Empathy
- Focus
- Challenge-seeking
- Help-seeking
- Productive Perseverance
- Strategic learning

**WHY they engage in learning**

*Dockterman 2018*
3 LEARNING MINDSETS

➤ **Purpose & Relevance**: The belief that one’s schoolwork is valuable because it is personally relevant and/or connected to a larger purpose

➤ **Growth Mindset**: The belief that intelligence can be developed

➤ **Belonging**: The belief that one is respected and valued by teachers and peers, and fits in culturally in one’s learning environment
LEARNERS VARY IN

WHAT they know and can do
- General knowledge and vocabulary
- Domain knowledge
- Procedural skills
- Technical and research skills
- Domain analysis

HOW they manage their learning
- Attention
- Empathy
- Focus
- Challenge-seeking
- Help-seeking
- Productive
- Perseverance
- Strategic learning

WHY they engage in learning
- I believe it’s worth doing.
- I believe I can learn what I need.
- I believe my group supports me.

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“Student-driven learning only works for learners who know how to drive.”

- David Dockterman, Ed.D.
HOW DO WE TURN VARIABLE LEARNERS INTO EXPERT, TENACIOUS LEARNERS?
LET'S MAKE A WORD CLOUD
TEXT: A TENACIOUS LEARNER CHARACTERISTIC

Complete this sentence. Tenacious learners ____________________.
LEARNERS VARY IN

WHAT they know and can do
- General knowledge and vocabulary
- Domain knowledge
- Procedural skills
- Technical and research skills
- Domain analysis

HOW they manage their learning
- Attention
- Empathy
- Focus
- Challenge-seeking
- Help-seeking
- Productive Perseverance
- Strategic learning

WHY they engage in learning
- I believe it’s worth doing.
- I believe I can learn what I need.
- I believe my group supports me.

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It's only when you hitch your wagon to something larger than yourself that you realize your true potential and discover the role that you'll play in writing the next great chapter in the American story.

—President Barack Obama, Wesleyan University

Commencement Speech, 2008
PURPOSE: MAKE IT WORTH DOING

➤ The content
  ➤ It matters for what I want to do
  ➤ It matters for the person I want to be
  ➤ It matters for becoming part of something big (self-transcendence)

➤ The task
  ➤ It’s unpredictable (in a low stakes way)
PURPOSE: MAKE IT WORTH DOING

➤ The content
  ➤ It matters for what I want to do
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➤ The task
  ➤ It’s unpredictable (in a low stakes way)
PURPOSE: MAKE IT WORTH DOING

➤ The content
  ➤ It matters for what I want to do
  ➤ It matters for the person I want to be
  ➤ It matters for becoming part of something big (self-transcendence)

➤ The task
  ➤ It’s unpredictable (in a low stakes way)
  ➤ It’s my choice (agency)

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Choice of how (unless the goal is to teach them a way, in which case choice may be about the what)

Dockterman 2018
The Benefit of Generating Errors During Learning

Rosalind Potts and David R. Shanks
University College London

Testing has been found to be a powerful learning tool, but educators might be reluctant to make full use of its benefits for fear that any errors made would be harmful to learning. We asked whether testing could be beneficial to memory even during novel learning, when nearly all responses were errors, and whether errors were unlikely to be related to either cues or targets. In 4 experiments, participants learned definitions for unfamiliar English words, or translations for foreign vocabulary, by generating a response and being given corrective feedback, by reading the word and its definition or translation, or by selecting from a choice of definitions or translations followed by feedback. In a final test of all words, generating errors followed by feedback led to significantly better memory for the correct definition or translation than either reading or making incorrect choices, suggesting that the benefits of generation are not restricted to correctly generated items. Even when information to be learned is novel, errorful generation may play a powerful role in potentiating encoding of corrective feedback. Experiments 2A, 2B, and 3 revealed, via metacognitive judgments of learning, that participants are strikingly unaware of this benefit, judging errorful generation to be a less effective encoding method than reading or incorrect choosing, when in fact it was better. Predictions reflected participants’ subjective experience during learning. If subjective difficulty leads to more effort at encoding, this could at least partly explain the errorful generation advantage.

Keywords: learning, education, errors, generation, metacognition

A central question for educators concerns how to maximize students’ retention of learned information. One technique that has been shown to be highly effective is the use of testing: A robust and highly replicated finding from both laboratory and classroom studies is that the very act of retrieving items from memory enhances memory for the tested items, the “testing effect” (see Roediger & Karpicke, 2006a, for a review). Simply inserting tests into the learning process therefore has the potential to provide a powerful boost to the amount of information retained. Indeed, the use of testing to promote learning was one of seven recommendations for educational practice made in a recent guide produced for the U.S. government (Pashler et al., 2007), the seven recommendations being based on “the most important, concrete and applicable principles to emerge from research on learning and memory” (Pashler et al., 2007, p. 1). Moreover, it has been found that the harder the test, and the greater the effort required for retrieval, the greater the benefit to subsequent memory (e.g., Carpenter & DeLosh, 2006; Pyc & Rawson, 2009). The most benefit is therefore to be gained by setting a difficult test.

However, a difficult test brings with it the risk that the learner may make many errors, and educators may be concerned that these errors will be reinforced by the act of testing, with a consequential harmful effect on learning, a concern that may deter them from making optimal use of testing as a learning tool. Such a concern is not unreasonable in the light of evidence that errors are best avoided during learning (e.g., Baddeley & Wilson, 1994). On the other hand, there is also evidence that generating responses can be beneficial even when many errors are produced, as long as corrective feedback is given (e.g., Kornell, Hays, & Bjork, 2009). A worthwhile goal, then, is to identify the conditions in which errorful generation may be either helpful or harmful to subsequent retention. The current article seeks to contribute toward achieving this goal.

The prevailing view is that a benefit of errorful generation only occurs when there is a preexisting semantic association between cue and target. If this is the case, this could limit the usefulness of testing in situations where errors are likely to be made, but this view is based on just a handful of recent studies, all of which have used artificial tasks and materials that are rather different from those likely to be encountered during real world learning, and it remains to be seen whether an errorful generation benefit could occur in a more typical educational scenario in which students are learning novel information. An important issue, therefore, is to understand more fully the effects of generating errors on memory, and to do so using educationally relevant materials such as might be encountered during real world learning. In the current study, we examined the effect of generating errors during the learning of previously unfamiliar vocabulary items, where there were no preexisting relationships between the cues and targets. To foreshadow, we found that generation could be beneficial to memory even when it produces many errors and even when information to
A MINDSET FOR PRODUCTIVE FAILURE

Feed the belief. Create the culture.
PROTECTING A “SMART” IDENTITY

➤ Avoidance - only attempting tasks with known (successful) outcome

➤ Deflection - blaming the teacher/task/others; offering pre-emptive excuses (“I didn’t study”)

➤ Cheating

“smart” can block growth

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Our brains are malleable.
FEEDING “INTELLECTUAL HUMILITY”

➤ Our brains are malleable.
➤ We can all, always, improve.

Dockterman 2018
Young Children Are More Generous When Others Are Aware of Their Actions

Kristin L. Leimgruber*, Alex Shaw, Laurie R. Santos, Kristina R. Olson

Department of Psychology, Yale University, New Haven, Connecticut, United States of America

Introduction

Human adults are unique in that they perform what appears to be an inordinate amount of generous behavior [1–4], even more remarkably, empirical evidence indicates that hints of these prosocial tendencies are present even early in development. Research shows that infants as young as eight months of age willingly share toys with family members, peers, and complete strangers [5–7]. At 14 months of age, children will help an adult experimenter complete a goal [8] and will even take a cost to help others by the time they are 20 months of age [9]. Finally, between the ages of two and four, children begin to share resources with others voluntarily [10], even when those resources are easily monopolizable [11–12].

Why do children show prosocial behavior from such an early age? To date, prosocial behavior in children has primarily been explained in terms of intrinsic motivations such as empathy, other-regarding preferences, or a desire for fair outcomes (e.g., [8,10,13–31]). Under this view, children want to help others because they are motivated by that person's need (see review: [22]). Other psychologists have suggested that prosocial behavior in infants and young children may also be driven by other motivations, such as presenting oneself favorably to others [23].

While a good deal of research has been done to investigate the role of other-regarding preferences or a desire for fair outcomes in explaining infants' and young children's willingness to share, less has been done to examine the role of presentation motivations in encouraging prosocial actions in young children. Unfortunately, because much of the research on prosocial behavior has been conducted using methods where a beneficiary and/or parent is present and aware of the child's actions (e.g., [21,24]), previous work cannot determine what role, if any, concerns with self-presentation may play in guiding this behavior.

To answer this question, it may be helpful to look at the factors associated with self-presentation motivations and prosocial behavior in adults in an effort to track the developmental trajectory of these tendencies. Recent research suggests that, at least for adults, prosocial actions stem in part from an implicit evolutionarily selfish motivation—promotion of one's reputation [25–31]. For the purposes of this paper, reputation is defined as any information-based inferences about an agent's character that may serve to inform others of the general nature of the agent's possible actions in the future, thus leading to possible future reciprocation or punishment. This is reputation in its most basic instantiation, and research suggests that even young infants respond differently to agents who have good and bad reputations [32–33]. Although they may not be aware of it, adults appear to be selective about the situations in which they choose to act prosocially. Specifically, adults often maximize their performance of generous acts in situations in which they choose to act prosocially. This study examined the developmental origins of sensitivity to cues associated with reputationally motivated prosocially by presenting five-year-olds with the option to provide one or four stickers to a familiar peer recipient at no cost to themselves. We systematically manipulated the recipient's knowledge of the actor's choices in two different ways: (1) the recipient's view of both the actor and the allocation options and (2) presenting allocations in opaque containers whose contents were visible only to the actor. Children were consistently generous only when the recipient was fully aware of the donation options; in all cases in which the recipient was not aware of the donation options, children were strikingly ungenerous. These results demonstrate that five-year-olds exhibit “strategic prosociality,” behaving differentially generous as a function of the amount of information available to the recipient about their actions. These findings suggest that long before they develop a rich understanding of the social significance of reputation or are conscious of complex strategic reasoning, children behave more generously when the details of their prosocial actions are available to others.

Abstract

Adults frequently employ reputation-enhancing strategies when engaging in prosocial acts, behaving more generously when their actions are likely to be witnessed by others and even more so when the extent of their generosity is made public. This study examined the developmental origins of sensitivity to cues associated with reputationally motivated prosocially by presenting five-year-olds with the option to provide one or four stickers to a familiar peer recipient at no cost to themselves. We systematically manipulated the recipient's knowledge of the actor's choices in two different ways: (1) occluding the recipient's view of both the actor and the allocation options and (2) presenting allocations in opaque containers whose contents were visible only to the actor. Children were consistently generous only when the recipient was fully aware of the donation options; in all cases in which the recipient was not aware of the donation options, children were strikingly ungenerous. These results demonstrate that five-year-olds exhibit “strategic prosociality,” behaving differentially generous as a function of the amount of information available to the recipient about their actions. These findings suggest that long before they develop a rich understanding of the social significance of reputation or are conscious of complex strategic reasoning, children behave more generously when the details of their prosocial actions are available to others.
Our brains are malleable.

We can all, always, improve.

Give status for growth (which must be transparent)

- Speed and accuracy
- Ratio of talk time; # of mistakes identified; positive feedback cycle; …

Growth mindset language

- You’re a genius!
- Great! You really rehearsed that step!
- I like the way you responded to that suggestion.
Getting Focused

Intelligence isn’t just your ability to memorize information and remember it when you need to. Your ability to maintain and focus your attention affects how intelligent you can become.

As with other skills, you can improve your focus and concentration with practice. Your level of concentration and focus is directly related to your ability to pay attention. This means that you can practice paying attention, and actually get better at focusing and concentrating.

Scientists have even discovered that concentration can increase connections inside our brain’s attention networks. So, the more connections your brain makes, the smarter you become. By focusing and paying attention, you’re strengthening your brain, practicing concentration, and learning more!

How much do you agree or disagree with this statement?

While working in the Learn Zone, I stay focused by paying close attention to lesson videos and the feedback I receive, even if it means doing problems over again.

Select which one applies the most:

 Agree a lot  Agree  Agree a little  Disagree a little  Disagree  Disagree a lot

Explain why you agree or disagree with the statement.

GROW your brain neurons.
✓ You have billions of neurons!
✓ You can grow more all the time!
✓ Healthy choices grow healthy brains!

Focusing on Concentration

Describe a situation when you were focused and concentrated while learning something new. How did your focus and concentration make you feel about yourself?

Describe a situation when you were not focused or concentrated while learning something new. How did your lack of focus and concentration make you feel about yourself?

Focus & Concentration Strategies

Focus and concentration will help you be successful. Use these strategies to plan how to improve your focus and concentration in MATH 180.

EXPLAIN HOW YOU WILL USE THESE STRATEGIES

- Calm Your Mind
  - My mind feels a little stressed in MATH 180 during .
  - One way I will calm my mind is to .

- Acknowledge and Release Random Thoughts
  - I sometimes have random thoughts when working on .
  - One way to release these thoughts and concentrate is to .

- Focus on One Thing Only
  - The most difficult thing to focus on in MATH 180 is .
  - One way to direct my focus and attention during class is to .

- Identify and Eliminate Distractions
  - I sometimes get distracted in MATH 180 while working on .
  - One way to eliminate distractions during class is to .

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DELIBERATE PRACTICE

It’s about doing, not just knowing

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A PATH FOR GETTING BETTER

➤ What’s the next best thing for me/us to work on?
➤ How do I know I’m getting better?
A PATH FOR GETTING BETTER

➤ What’s the next best thing for me/us to work on?
➤ How do I know I’m getting better?
➤ What do I do if I’m stuck?

Dockterman 2018
A PATH FOR GETTING BETTER

➤ What’s the next best thing for me/us to work on?
➤ How do I know I’m getting better?
➤ What do I do if I’m stuck?
➤ How do I stop myself from getting discouraged?

Dockterman 2018
BELONGING TO A LEARNING CULTURE
Psychological Safety and Learning Behavior in Work Teams

Amy Edmondson
Harvard University
CHANNELING CLOVER FOOD

always a first time

Dockterman 2018
Is mental effort exertion contagious?

Kobe Desender & Sarah Beurms & Eva Van den Bussche

Published online: 12 August 2015

Psychonomic Society, Inc. 2015

Abstract

The presence of another person can influence task performance. What is, however, still unclear is whether performance also depends on what this other person is doing. In two experiments, two participants (A and B) jointly performed a Simon task, and we selectively manipulated the difficulty of the task for participant A only. This was achieved by presenting A with 90% congruent trials (creating an easy task requiring low effort investment) or 10% congruent trials (creating a difficult task requiring high effort investment). Although this manipulation is irrelevant for the task of participant B, we nevertheless observed that B exerted more mental effort when participant A performed the difficult version of the task, compared to the easy version. Crucially, in Experiment 2 this was found to be the case even when participants could not see each other’s stimuli. These results provide a first compelling demonstration that the exertion of effort is contagious.

Keywords


Introduction

Nowadays, an increasing number of people perform their daily working duties in the presence of others, for example in open landscape offices. The introduction of these landscape desks is often met with criticism, arguing that the design hampers efficient work, due to an overflow of potential sources of distraction. This raises a straightforward empirical question: What is the influence of co-workers on our task performance?

According to the Social Facilitation Theory (Zajonc, 1965), the presence of another person facilitates the execution of dominant responses, which are those behaviors that are highly overlearned and executed without deliberate cognitive control (Botvinick, Braver, Barch, Carter, & Cohen, 2001). The presence of another person thus makes it easier to execute a dominant response when it is appropriate, but harder to overcome it when this is not the case (see Baron, 1986, for a different interpretation). More specifically, performance on a simple, low-level motor task improves in the presence of observers (Travis, 1925), whereas performance on a difficult test-battery assessing executive functioning worsens in the presence of a third-party observer (Horwitz & McCaffrey, 2008; for a final meta-analysis, see Bond & Titus, 1983). In line with this, recent studies have shown that performance on a conflict task assessing executive functioning decreases in the presence of others who are executing the same task (Huguet, Barbet, Belletier, Monteil, & Fagot, 2014), suggesting that the presence of these others taxes our cognitive control capacity (see also Conty, Gimmig, Belletier, George, & Huguet, 2010).

As described above, the Social Facilitation Theory only deals with explaining how the presence of another person influences performance, but it does not address action-specific influences of others. As a result, most studies to date investigating the influence of social presence on cognitive control have compared the mere presence versus the absence of another person. Contrarily, ideomotor theories (James, 1890; Jeannerod, 1999) predict that our behavior is highly dependent on actions that we observe in other people (for empirical demonstrations, see e.g., Chartrand & Bargh, 1999; Iacoboni *et al.*).
PARTING THOUGHTS

➤ Separate *performance* assessments from *growth* activities.

➤ Reinforce intellectual humility and a learning identity.

➤ Create a space where it’s normal to *learn* from failure.
THANK YOU. QUESTIONS?

david_dockterman@gse.harvard.edu

twitter: @dockterman