The Big Three—Understanding and Applying Basic Affective Skills that Underlie CPS: The Thinking Skills Model

Excerpts from
A Paper prepared for the American Creativity Association’s 20th International Conference in Singapore by
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What is CPS: The Thinking Skills Model and How Does It Relate To Cognitive And Affective Skills?

Puccio, Murdock and Mance (2005; 2007) have proposed an approach to understand and use the Creative Problem Solving process (Osborn, 1953; Parnes, 1967; Parnes, Noller & Biondi, 1977; Parnes, 1988) that explicitly integrates thinking skills into traditional views of the model framework. They call this CPS: The Thinking Skills Model. (For more information about CPS: The Thinking Skills Model see Creativity Rising.) In this approach, they regard the CPS model and process as a basic heuristic for how people think when in a creative problem solving mode, and for how those kinds of thinking could be more deliberately incorporated into a rational, organized system.

The basic CPS: The Thinking Skills Model consists of three broad stages of thinking – clarification, transformation and implementation – that people naturally do when solving problems or examining challenges. To organize thinking within the model further, Puccio, Murdock and Mance (2007) identified six basic steps: Exploring the Vision, Formulating Challenges, Exploring Ideas, Formulating Solutions, Exploring Acceptance, and Formulating a Plan. A seventh executive step, Assessing the Situation, guides users through content or process decisions in each step. In addition to the TSM’s overall framework, Puccio, Murdock and Mance articulated a set of specific cognitive thinking skills and supporting affective skills to expand the thinking skills language for use in with the overall CPS process. The steps and corresponding cognitive and affective skills are outlined below.
Introduction to the Affective Skills in CPS: The Thinking Skills Model

When Puccio, Murdock and Mance (2007) considered how they wanted to frame the skills for the TSM, they took a view similar to Mackinnon’s (1978) early one that creativity and the commensurate production of change was a result of both thinking and emotion. But the term emotion alone did not seem to capture the scope of what they intended. To expand this, they looked to Ruth Noller’s classic formula definition of creativity: \[ C = f_a(K, I, E) \] or “Creativity is a function of attitude times Knowledge, Imagination and Evaluation” (found in Isaksen, Dorval & Treffinger, 1993). The key issue, illustrated in Noller’s formula, was the central impact of attitude on knowledge, imagination and evaluation. In Noller’s view as well as their own, attitude mitigated how creativity and thus, creative process, impacted (1) what we knew or learned; (2) what and whether or not we imagined; and (3) how we evaluated (Puccio, Murdock & Mance, 2007).

Given Noller’s definition as a baseline, they defined Affective as the ways “in which we deal with attitudinal and emotional aspects of learning, including feelings, appreciation, enthusiasm, motivations, attitudes and values” (Butler, 2002, p. 3).

They also use the word “skills” to refer both to thinking and affect because both were necessary for effective performance within each step and could be developed through practice. They did not claim that the TSM’s skills – either cognitive or affective – were discrete to each step with no overlap; indeed, there are many cognitive and affective skills involved even in small tasks. Instead, they made the case that some categories of thinking skills were more basic to the function of some CPS steps than to others, and that these thinking skills could be enhanced through some specific affective dispositions (Puccio, Murdock, & Mance, 2007).

Support for the “Big Three” Affective Skills in the TSM

In putting together the affective aspects of CPS: The Thinking Skills Model, Puccio, Murdock & Mance (2005; 2007) drew upon a body of literature that ranged from early views such as MacKinnon’s creativity work above to the current general emotional intelligence approach of Goleman (1998; Goleman, Boyatzis, & McKee, 2002). The function of the affective skills within the model was to support the cognitive ones, to enhance understanding of what needs to happen in each step to make the CPS process operate smoothly. As with the cognitive skills,
they did not imply that one skill only “fit” each step, but rather that there were some dominant influences within each step that assisted the use and understanding of the cognitive skills.

**Insert 1.1 CPS Steps: Cognitive and Affective Skills**

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<thead>
<tr>
<th>Step</th>
<th>Cognitive Skill</th>
<th>Affective Skill</th>
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<tbody>
<tr>
<td>Assessing the Situation</td>
<td>Diagnostic Thinking</td>
<td>Curiosity</td>
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<td>Making a careful examination of</td>
<td>A desire to learn or know,</td>
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<td>a situation, describing the nature</td>
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<td>process steps to take</td>
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<td>Exploring the Vision</td>
<td>Visionary Thinking</td>
<td>Dreaming</td>
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<td>Articulating a vivid image of</td>
<td>To imagine as possible your desires</td>
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<td>what you desire to create</td>
<td>and hopes</td>
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<td>Formulating Challenges</td>
<td>Strategic Thinking</td>
<td>Sensing Gaps</td>
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<td>Identifying the critical issues</td>
<td>To become consciously aware of</td>
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<td>Exploring Ideas</td>
<td>Ideational Thinking</td>
<td>Playfulness</td>
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<td>Producing original mental images</td>
<td>Freely toying with ideas</td>
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<td>Formulating Solutions</td>
<td>Evaluative Thinking</td>
<td>Avoiding Premature Closure</td>
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<td>Assessing the reasonableness and</td>
<td>Resisting the urge to push for a</td>
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<td>quality of ideas in order to</td>
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<td>develop workable solutions</td>
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<td>Exploring Acceptance</td>
<td>Contextual Thinking</td>
<td>Sensitivity to Environment</td>
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<td>Understanding the interrelated</td>
<td>The degree to which people are</td>
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<td>conditions and circumstances</td>
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<td>success</td>
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<td>Formulating a Plan</td>
<td>Tactical Thinking</td>
<td>Tolerance for Risks</td>
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<td>Devising a plan that includes</td>
<td>Not allowing yourself to be</td>
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<td>specific and measurable steps</td>
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<td>for attaining a desired end and</td>
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**Affective Skills that Underlie all Steps of CPS (The Big Three)**

- **Openness to Novelty**: Ability to entertain ideas that at first seem outlandish and risky
- **Tolerance for Ambiguity**: To be able to deal with uncertainty and to avoid leaping to conclusions
- **Tolerance for Complexity**: Ability to stay open and persevere without being overwhelmed by large amounts of information, interrelated and complex issues and competing perspectives
Understanding and Applying the Big Three

The following section includes descriptions of the three affective skills that underlie the entire CPS process. Also, there are practical suggestions for how to improve each of the skills.

Openness to Novelty.

“If at first the idea is not absurd, there is no hope for it.”
- Albert Einstein.

The first of the Big Three affective skills that underlie CPS: The Thinking Skills Model is Openness to Novelty. Novelty is one of the most generally agreed upon characteristics of creativity in the literature (Amabile, 1987; Bruner, 1962; Mackinnon, 1978; Torrance, 1988). How people receive or respond to novelty is critical to the success of any creative activity. Because novelty is so integral, having an attitude of openness and a willingness to accept new, unusual, or different thoughts, ideas, solutions or actions is central to effective use of CPS overall. Openness to Novelty is defined as, "being able to entertain ideas that at first seem outlandish and risky" (Puccio, Murdock & Mance, 2007, p. 51-52).

Often when people use CPS or participate in formal CPS sessions, they are quite unprepared when they actually get what they asked for: a different and often unusual idea or angle to view a problem. Some often-observed negative emotions or reactions associated with confronting novelty are suspicion, disbelief, sarcasm, disdain, confusion, annoyance and impatience. If not prepared on the affective side for this kind of reaction, people can reject the very things they were looking for, not because of lack of potential, but because of their discomfort with novelty. If people can respond to novelty as a possibility for the future and not succumb to the discomfort of what it looks like in the present moment, they can be more receptive the benefits of thinking differently. Some positive emotions associated with novelty are surprise, intrigue, puzzlement, curiosity and even delight.

Insert 1.2 contains some suggestions for what you can do to get better at keeping open to novelty.
Insert 1.2. Things You Can Do to Practice Openness to Novelty

• Become aware of your habits and patterns and then consciously break or modify them. What do you notice? What was easy or hard?
• Be aware of your style preferences and consciously try to step outside of your comfort zone; deliberately work with people whose style is different from your own.
• Meet new people – make an effort to talk to people you wouldn’t ordinarily approach.
• Practice deferring judgment first on small things with little cost-benefit trade off and later on things you are more invested in.
• Look to role models and stories from how others benefited from being open to novelty. Get inspiration from their success. Remind yourself that it might be worth it to stay open if others have had good results.
• Learn from others how they stay open.
• When an idea seems too “out there,” find five ways that it might prove useful, ex. What population might benefit from it? Under what circumstances might it be helpful? For example if you were an elephant trainer, a pregnant woman, etc.
• Instead of focusing on what is wrong with something, look at what is right with it.
• Debrief your own experiences – after a meeting, after a difficult decision, etc. ask yourself if you were truly open to new ideas or suggestions. What might you have done differently if you had been more open?
• Ask colleagues to evaluate your openness to novelty – get feedback on how you treat ideas.
• Gather more ideas than you normally would. Ask others for their ideas and tell them you are looking for crazy ideas. Smile and thank them when they give you something you think would never work.
• Practice writing down ideas that you normally would dismiss.
• Smile and thank people for “odd” or unusual ideas when you normally would make negative comments. Encourage them to give you more.
• When you have decided on a solution – ask yourself – what else could I do? And come up with at least 5 other possible solutions before deciding which one to pursue.
• Ask yourself – what would (fill in the blank with a person who usually has an unusual perspective) do? Ex. Jim Carey, Bette Midler, Ellen DeGeneres or other comedian do?
• Seek out people that you know think differently than you do and ask for their opinions and ideas.


Tolerance for Ambiguity.
You will discover very little creativity in yourself without the discomfort of confusion, uncertainty, anxiety and ambiguity.  
- Jeff Mauzy & Richard Harriman in Creativity, Inc.

The second of the Big Three skills that underlies the CPS: The Thinking Skills Model is **Tolerance for Ambiguity**. Because CPS is used on complex problems where solutions may not be readily available, it is often necessary to work through vague, unclear or tacit data or situations to get to the other side. Ideas often just pop up when people least expect them and being patient when nothing seems to be clear allows this to happen. In addition, when creative problem solving takes what seems to be an unusual path (which is, after all, why one would be using it), tolerance for ambiguity can allow you to stay with the flow longer and perhaps find some benefit in unknown territory.

Tolerance for Ambiguity is about our need to solve and to solve quickly because, as the old joke goes, the best thing about a painful experience is that "it will feel so good when it stops." Tolerance for ambiguity is defined as, "being able to deal with uncertainty and to avoid leaping to conclusions" (Puccio, Murdock & Mance, 2007, p. 53). On the receiving or responding side of affective behaviors, one would always be in some state or degree of uncertainty in order to need what CPS process could provide. Thus, some level of tolerance for uncertainty or ambiguity is necessary in order to be ready to engage in CPS overall, regardless of steps or stages or other kinds of cognitive thinking what would be required. Without this underlying readiness, or at least tools or strategies to mitigate it, the psychological push to closure would overwhelm the open cognitive space needed to effectively search for options in answers or solution, in effect, slowing down one's movement through the CPS process or perhaps shutting it down altogether.

Ambiguity comes with a host of feelings and emotions to manage, ranging from minor annoyance to major distress. Doubt, fear, anger, annoyance, and confusion are only a few of the reactions individuals or groups participating in the Creative Problem Solving process are likely to experience if they are not well prepared ahead of time. Awareness, although a helpful partner in this process, may still not be enough to mitigate the powerful psychological tension that results from our urge to close on or to complete incomplete information. Insert 1.3 contains some suggestions for what you can do to get better at tolerating ambiguity.
Insert 1.3. Things you Can Do to Practice Tolerance for Ambiguity

• Focus on the present moment – try not to focus on outcomes or effects.
• Observe, rely on your senses (sight sound, taste, touch).
• Push on your comfort level – move beyond what you are at ease with a first with small things and then later with bigger, more important ones.
• Slow down before you respond – there is a reason that conventional wisdom says that if you are angry, count to ten before saying or doing anything.
• Use breathing as a slow-down strategy.
• Seek out complex issues and explore the known and the unknown of the issue. Ask yourself how you might find out more about what is unknown. Just listing what is unknown makes it more tangible.
• Appreciate the benefits to staying with the ambiguous. When was this helpful to you?
• Become less annoyed and more curious.
  - When you feel yourself becoming uncomfortable with a “grey” conversation, remind yourself that staying in the grey a little longer might lead somewhere productive. Change your perspective from “This is off topic and getting us nowhere” to “This is off topic and I wonder where it might lead?”
  - Ask others to help you make connections when something seems ambiguous for you. Get curious – “I’m not really seeing the connection here, what am I missing?”
• Ask others to give you feedback when you are moving too quickly to closure.

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Tolerance for complexity.

There is no such thing as a failed experiment, only experiments with unexpected outcomes. 

Buckminster Fuller

Mumford et al. (2000) have commented that “Environmental change, sub system differences and the diversity of human beings result in organizational contexts defined by complexity” (p. 13). Tolerance for Complexity is defined as "being able to stay open and persevere without being overwhelmed by large amounts of information, interrelated and complex issues and competing perspectives" (Puccio, Murdock and Mance, 2007, p. 52).
In Tardif & Sternberg’s (1988) summary of agreement of their authors on the nature of creativity, they noted, “By far the greatest amount of agreement is that creativity takes time” (p. 430). The time factor is related to complexity: if the clarification, transformation or implementation of what we sought from a deliberate process was simple, we would “just do it,” and move on. Instead we need time to work out the “kinks” – to untangle the knotted threads of ideas, data issues, concerns, beliefs, values, preferences and perceptions that make up an ill-defined problem space.

When the CPS process is skillfully applied, however, by individuals or by groups, its rational structure will successfully untangle the cognitive complexity of an unstructured challenge. The challenge on the affective side in terms of receiving and responding is for participants to be able to tolerate the complexity long enough to allow one thing to lead to another. The tension of complexity, coupled with the tension of ambiguity coupled with a large dose of novelty often leads people to "cave in" to emotional responses such as frustration, distrust, impatience, anger or sarcasm. These affective responses affect the problem-solving attitude of everyone involved and make it difficult for the powerful cognitive thinking skills to do their job effectively.

Insert 1.4 contains some suggestions for what you can do to get better at tolerating complexity.

**Insert 1.4. Things You Can Do to Practice Tolerance for Complexity**

- Breathe deeply (seriously). Recognize that complexity is actually like a mystery that needs to be solved. Become a detective and look for what makes a situation complex rather than simple.
- Appreciate complexity – in nature, in people, in situations. “Always look on the bright side…”
- Ask yourself why complex is better than simple. Remind yourself when a situation seems too complex: “This is a good thing.”
- Consider ways to deal cognitively to feel more in control:
  - Break down a complex situation into pieces. Use the 5 W’s and H to analyze a situation.
  - Create a plan – use tactical thinking. Diverge on all the tasks, etc and put them in order to accomplish them.

Conclusion

It is our contention here and elsewhere that although many people view CPS as mainly a cognitive process, deliberate creativity does not result exclusively from a thought process. The work of Amabile (1983) and Torrance (1983) support the influence of affective states, such as motivation and passion on people’s ability to create and on the development of skills that can be impacted.

Viktor Frankl (1946), founder of logotherapy and Holocaust survivor, observed that “The last of the human freedoms is the ability to choose one’s attitude in any given set of circumstances….” (p. 75). We contend that, along with Noller’s (date) definition, the operational use of affective skills speaks to the influence of attitudes on creativity and to our freedom and responsibility to respond to it. By including affective elements and committing to work with them, which is, by the way, neither a simple nor easy task, we are standing up for people’s capacity to (1) choose openness to novelty for the sake of finding new ways to see old problems and for seeking new ways to perceive and act upon our world; (2) to choose to tolerate ambiguity for the sake of allowing the unknown and unexpected to appear, emerge, or otherwise grace us with the gift of differentness; and (3) to choose to confront complexity for the interesting, challenging concept that it is, rather than as a fearful thing over which we have no control.
References


