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Exploring Metacognition as a Support for Learning Transfer

Lauren Scharff (DFEI), John Draeger (SUNY Buffalo State), Dominique Verpoorten (IFRES-University of Liège), Marie Devlin (Newcastle University), Lucie S. Dvorakova (University of Queensland), Jason M. Lodge (University of Melbourne), Susan Smith (Leeds Beckett University)

Background

The ability to transfer learning to new situations lies at the heart of lifelong learning and the employability of university graduates. This project explores the idea that metacognition might enhance the development of learning transfer.

Learning transfer:

The ability to take what is learned in one context and apply it effectively in another context.

Metacognition:

The intertwining of awareness (i.e., self-monitoring) and use of that awareness (i.e., self-regulation) to advance a process (e.g., writing, studying, driving, cooking).

Challenges to Learning Transfer

Students:

Unaware of importance
(Lightner, Benander, & Kramer, 2008)
Unaware of strategies
(Billing, 2007)
Lack of content awareness

(Newman, Catavero, & Wright, 2012)

Instructors not explicit

(Benander & Lightner, 2005)

Faculty:

Need time to cover material
(O' Connor, 2006)

Believe teaching transfer skills are outside their expertise

Our exploratory questions:

How do perceptions and practices of learning transfer and metacognition compare between students and faculty?

Is there a relationship between metacognition and learning transfer?

Participants

Level of Experience Categorizations and Ns for Each Group			
Level Experience	Operational Definition	# Students	# Staff
New	1 st year undergrad students; 0-4 years of teaching if staff	20	9
Mid	All other undergraduate students; 5-10 years of teaching if staff	50	34
Advanced	Graduate students; 16+ years of teaching if staff	29	26

5 institutions in USA, UK, Belgium, and Australia participated

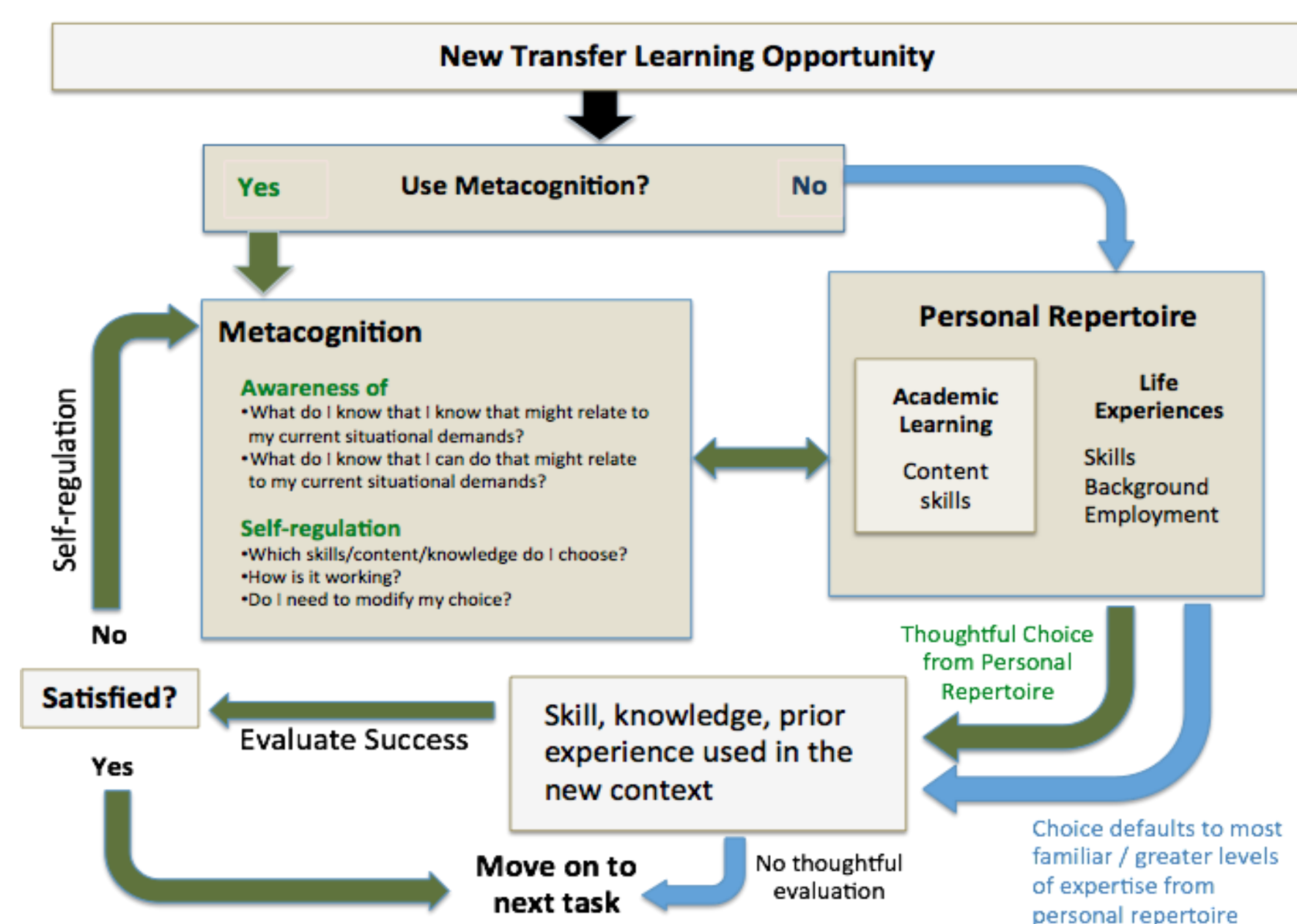


Figure 1a: Schematic of how the use of metacognition can enhance learning transfer by encouraging thoughtful choice of content and skills from the personal repertoire.

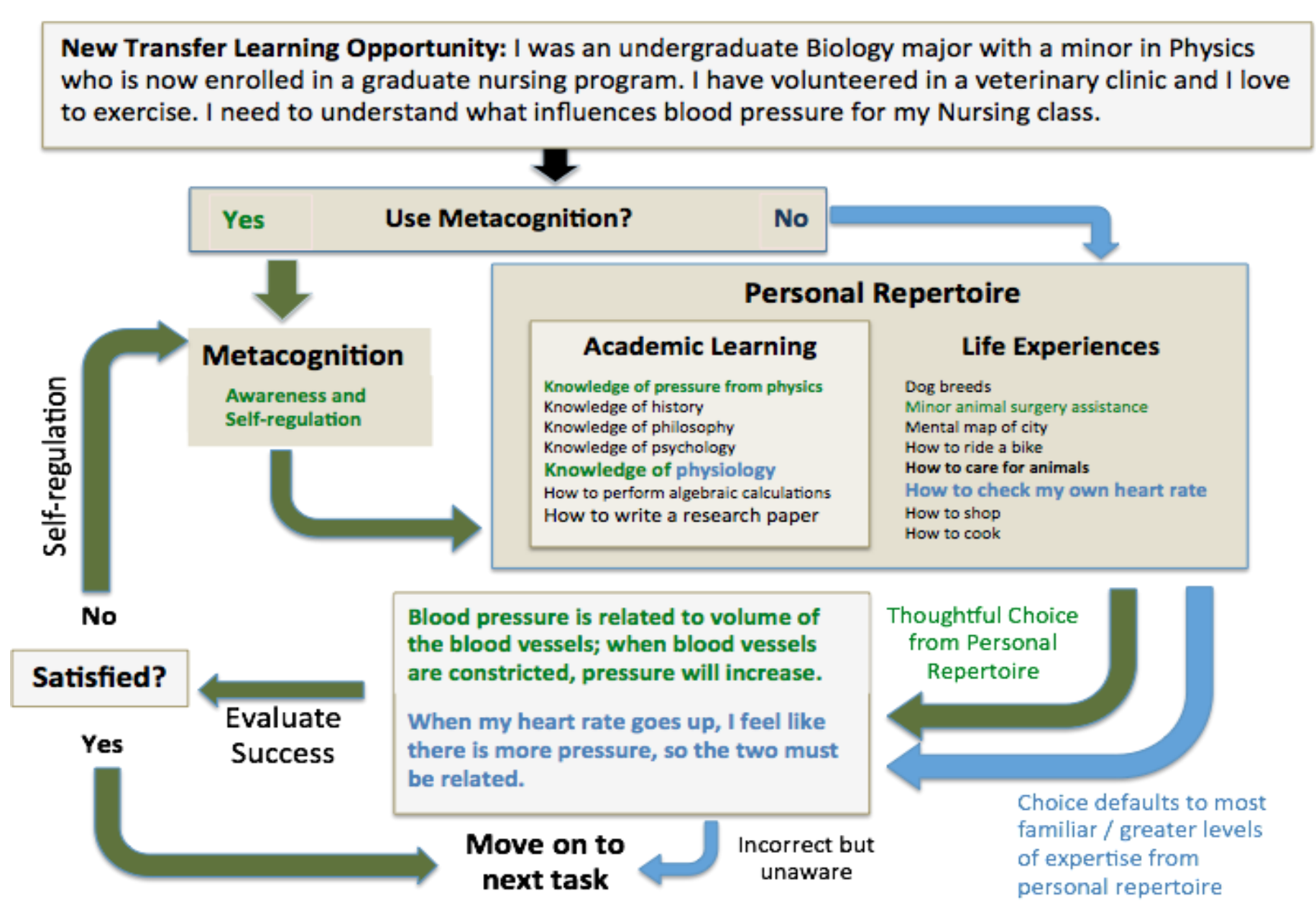


Figure 1b: Illustrates how a new situation (the need to understand blood pressure) might initiate transfer. Metacognition can encourage use of less familiar (shown in smaller font) but more pertinent knowledge rather than simple default to that which is most familiar (shown in larger / bold font).

Questionnaire & Results

Questionnaires asked about:

Meaning of transfer
Frequency
Determinants
Strategies for promoting
Awareness of learning process
Metacognition & Transfer

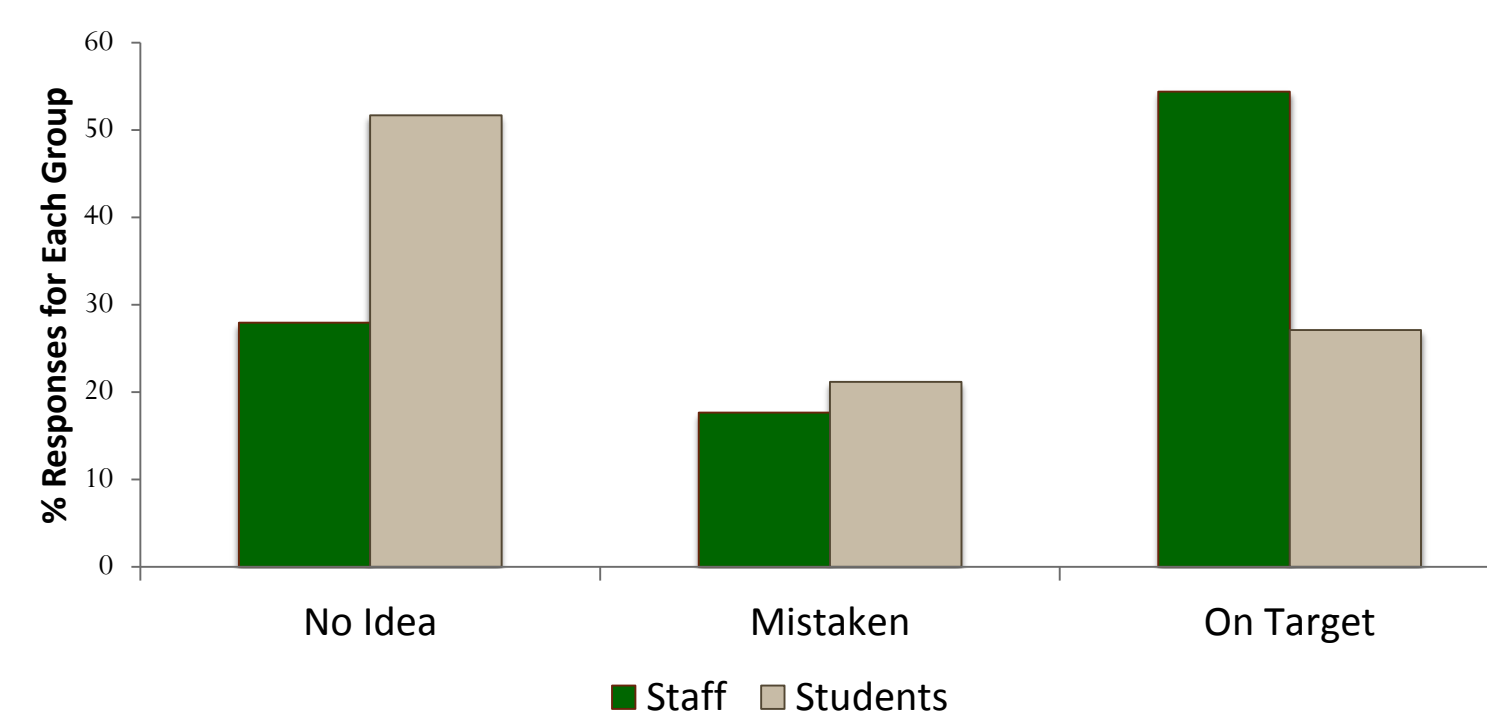


Figure 2: Categorization of staff and students' open-ended definitions of learning transfer

Faculty, regardless of level of experience, reported **explicitly thinking** about helping students apply their learning from one context to another significantly more often than students reported explicitly thinking about doing so themselves $F(1,174) = 8.53, p < .01$ ($M = 4.03$ and 3.57 , respectively, with $1 = \text{never}$ and $5 = \text{every day}$).

Regardless of level of experience, faculty report **expecting students to engage in transfer** more often, on average nearly 'every week' ($M = 3.9$), while students reported perceived expectations closer to 'sometimes during the semester' ($M = 3.4$), $F(1,168) = 9.44, p < .01$.

For faculty and students combined, **thinking about learning transfer significantly and positively correlates with:**

- the likelihood to think about learning strategies, $r(168) = .46, p < .01$,
- the likelihood to think about teaching strategies $r(66) = .42, p < .01$,
- the likelihood to use awareness to guide practice, $r(168) = .51, p < .01$

Conclusions & Future Directions

Our results indicate that many faculty and a majority of students do not have a clear understanding of what learning transfer entails, and that there are many mismatches between faculty and student perceptions, attitudes, and behaviors regarding learning transfer.

We believe that these findings largely result from two factors,

- 1) lack of explicit communication to promote awareness and shared expectations, and
- 2) the pressure to cover content that is felt at institutions around the world and frequently dominates lessons in the often-isolated courses within the curriculum.

Our correlation data suggest that metacognition might indeed be a useful approach by which to promote learning transfer.

As with other skills, becoming adept at learning transfer (or becoming effective at teaching learning transfer) will require multiple opportunities for practice coupled with feedback, both of which will not tend to happen spontaneously, but instead require purposeful lesson design by the staff member and effort by the learner.

Future Directions: We plan to more empirically investigate whether a metacognitive approach leads to increased transfer of learning, and how that might be influenced by disciplinary differences.

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