

# A proposed conceptual framework of drawing ability: Implication for research in design education

- Research problem
- Current literature
- Research gap
- Proposed conceptual framework
- Implications for research

## Research problem

Drawing ability and drawing knowledge are historically regarded as the fundamental competences to be developed in design education

According to the last RIBA Skills Survey Report<sup>1</sup>

- Drawing ability - both manual and digital - is (still) the most important technical skill to master in design practice
- Graduates and students lack the necessary skills to design and the necessary knowledge to realise their design ideas
- Graduates are unprepared to face the real design practice

1. Waterhouse, R., Dobson, A., Dobson, J., Ronish, Y., & Weston Smith, C. (2014). *RIBA Appointments Skills Survey Report 2014*.

**Why is it so difficult to acquire this ability?**

EXPLORATION



**Which are the factors influencing the ability to draw?**

## Current literature: What is *Drawing ability*?

It is an umbrella term describing a number of other more specific abilities related to cognitive and psychomotor processes through which is possible to transform an idea into graphic representations

# Current literature: Which are the factors that influence the ability to draw?

| Date | Author/s                                         | Definition                                                                                                             | Factors                                                                                                                                                                                   | Class of factors                                                                                                             |
|------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| 2014 | Perdreau & Cavanagh                              | It is related to the ability to construct mental representations of an object in a single glance                       | <ul style="list-style-type: none"> <li>Visual process</li> <li>Mental representation</li> <li>Encoding of object structure</li> </ul>                                                     | <ul style="list-style-type: none"> <li>Visualization and Spatial relation</li> </ul>                                         |
| 2015 | Tumkor & Vries                                   | Ability to visualize mentally the space, underpinned by critical thinking, modelling and problem-solving processes     | <ul style="list-style-type: none"> <li>Spatial visualization</li> <li>Training</li> </ul>                                                                                                 | <ul style="list-style-type: none"> <li>Visualization and Spatial relation</li> <li>Persistence</li> </ul>                    |
| 2015 | Chamberlain, McManus, Brunswick, Rankin, & Riley | Complex skill at the base of many forms of visual arts, which shares the same features of other domains of expertise   | <ul style="list-style-type: none"> <li>Approach to learning driven by personality</li> <li>Engagement in drawing practice</li> <li>Strategies to overcome drawing difficulties</li> </ul> | <ul style="list-style-type: none"> <li>Visualization and Spatial relation</li> <li>Persistence</li> <li>Coping</li> </ul>    |
| 2015 | Lin, Luo, Wu, Shen, & Sun                        | Ability to control and improve drawing speed, pen-plan and hand-pen contact forces                                     | <ul style="list-style-type: none"> <li>Fine motor development</li> <li>Schooling</li> </ul>                                                                                               | <ul style="list-style-type: none"> <li>Aiming, Manual dexterity, and Arm-hand steadiness</li> <li>Prior knowledge</li> </ul> |
| 2016 | Power, Buckley, & Seery                          | It correlates with spatial reasoning capacities and self-efficacy beliefs                                              | <ul style="list-style-type: none"> <li>Spatial ability</li> <li>Self-efficacy</li> </ul>                                                                                                  | <ul style="list-style-type: none"> <li>Visualization and Spatial relation</li> <li>Personal beliefs</li> </ul>               |
| 2018 | Cohen, Bravi, Bagni, & Minciocchi                | It implies the coordination of precise hand movements, driven by external or internal cueing while drawing and tracing | <ul style="list-style-type: none"> <li>Fine motor control</li> <li>External/Internal cueing</li> </ul>                                                                                    | <ul style="list-style-type: none"> <li>Aiming, Manual dexterity, and Arm-hand steadiness</li> </ul>                          |

## Research gaps

- Imbalance between the two strands of research on drawing ability: cognitive-psychomotor, and psychologic-contextual
- Difficulty in having a cohesive understanding of drawing ability only through quantitative research

Research on drawing ability demands an integrated approach through which the interaction of different domains - cognitive, psychomotor, psychologic, contextual - discloses other realities of drawing ability, those strictly connected to cognition and motor capabilities, motivational drives, emotional responses and socio-cultural influences.



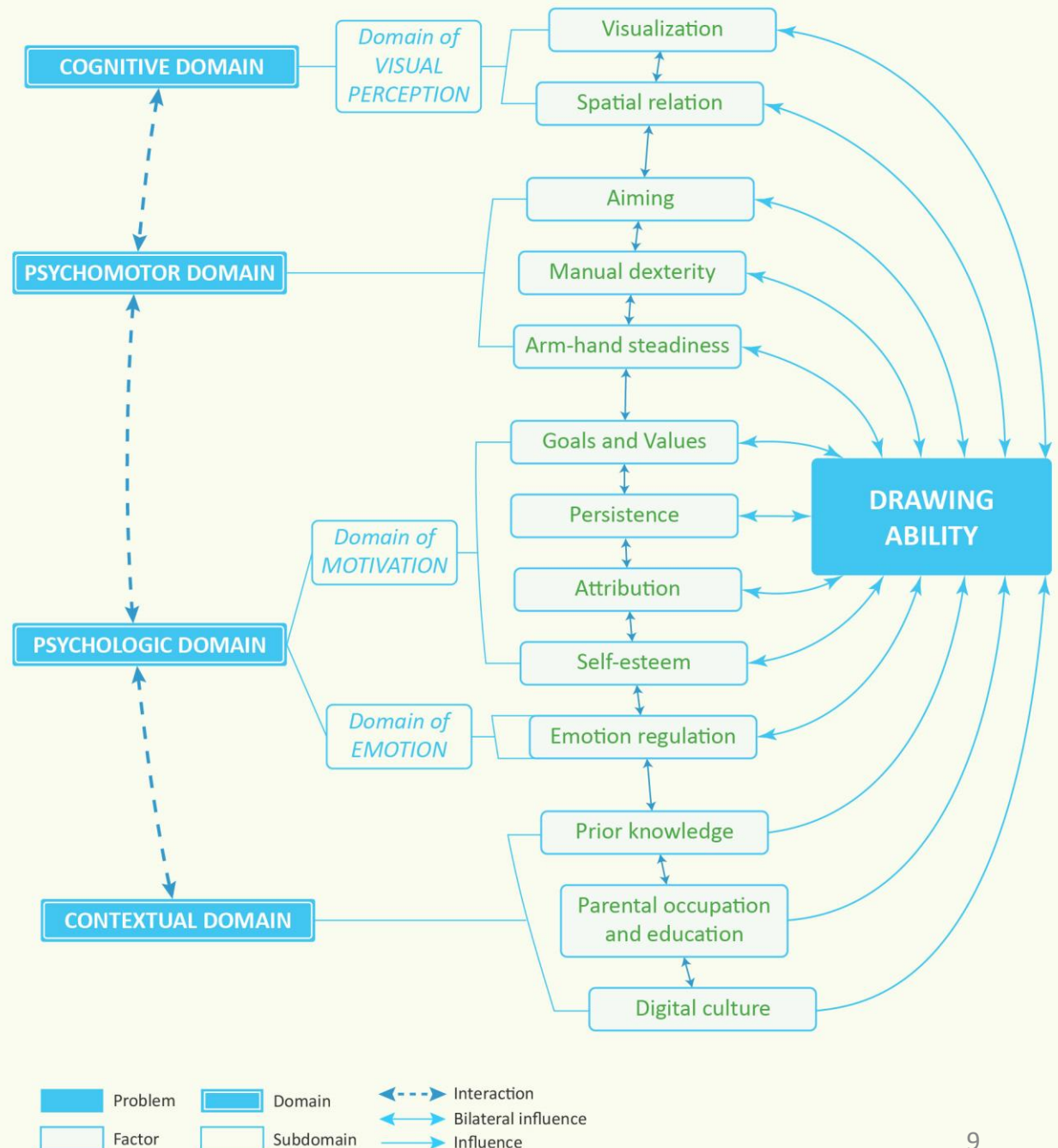
# Conceptual framework



## Integrated approach

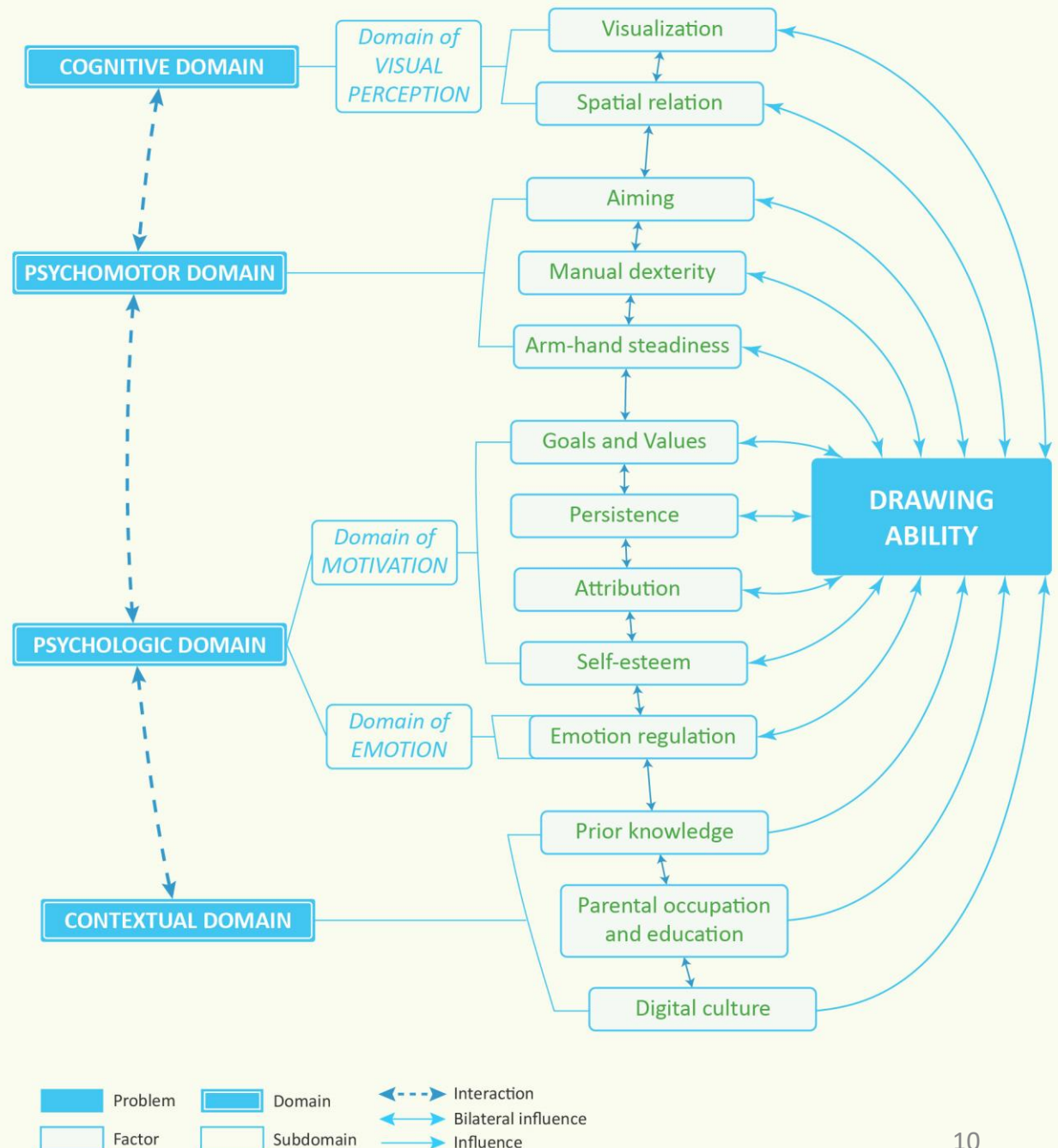
The conceptual framework is comprised of four domains of investigation.

Within these domains it is possible to explore the factors that contribute to the ability to draw.



All the factors could potentially determine the ability to draw and influence it, positively or negatively.

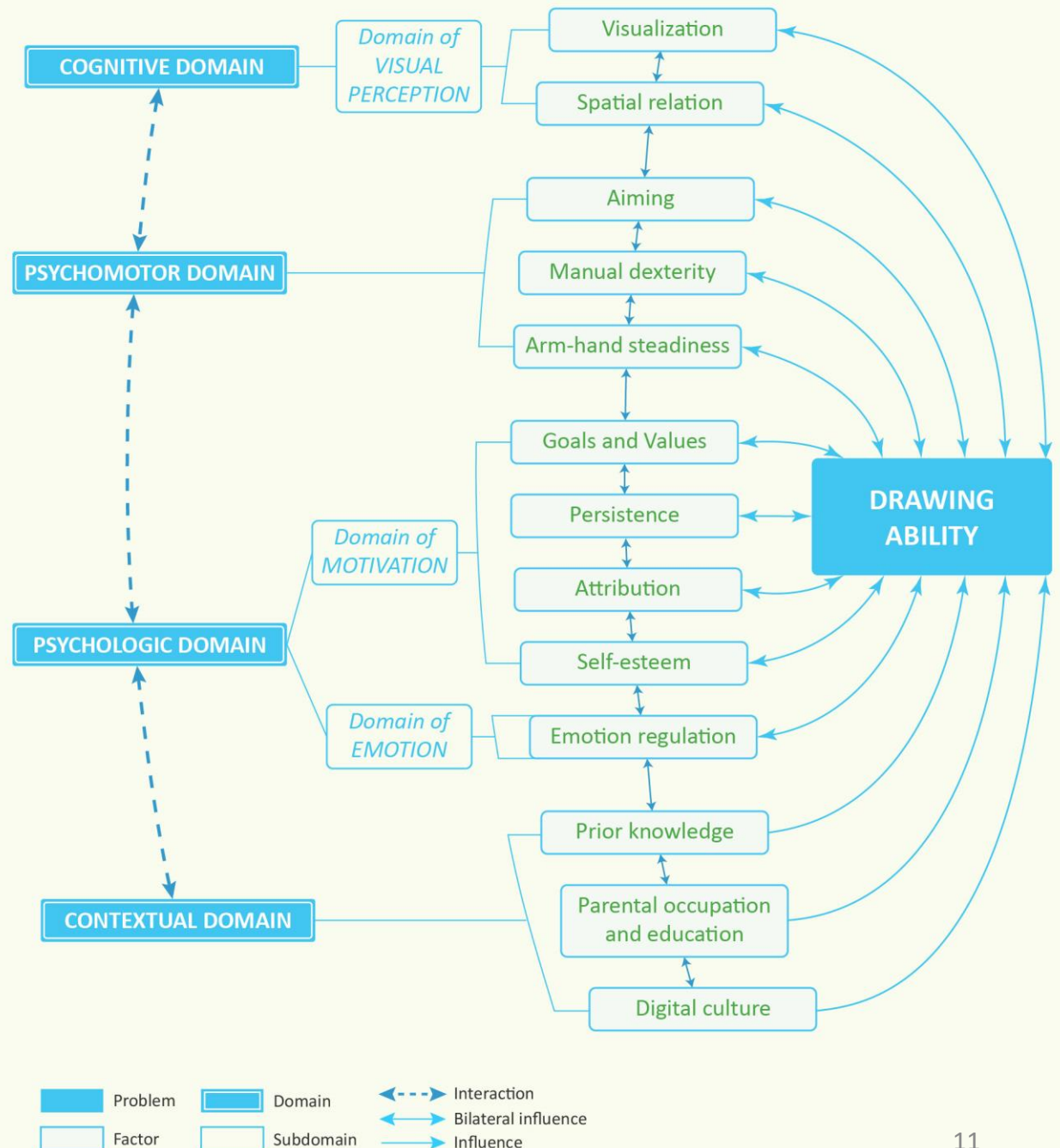
The reverse is also true, meaning that students' level of drawing ability could influence the way they judge themselves, value what they do, control their emotions, ponder their background, rely on different drawing instruments and technics, and use their cognitive and motor capabilities during a drawing experience.



Moreover, there could be a reciprocal influence between the factors.

For instance, whatever the students' level of drawing ability is, a change in the emotions experienced during a drawing task can automatically influence the cognitive and/or motor capabilities.

Therefore, the influence scheme among the factors could be represented by one-to-many or many-to-one scheme.



# Implications for design education and research

## The framework:

- Explicitly presents the domains that should be investigated and the factors to be analysed.
- Engages students in a critical reflection about their drawing problems they wish to overcome.
- Helps lecturers to understand the complexity behind students' drawing experience.
- Guides students and lecturers to develop together specific pedagogical strategies in order to increase drawing and design performances, as well as learning outcomes.

Thanks for your attention

Melissa Di Giovanni  
[m.digiovanni1@unimail.derby.ac.uk](mailto:m.digiovanni1@unimail.derby.ac.uk)