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Evaluation of thesis submitted by Zuzanna Laudańska

Dear Dr. Tomalski,

Thank you for the opportunity to read and evaluate the thesis submitted by Zuzanna Laudańska, "The development of motor and vocal coordination in infancy: dynamic systems approach", in fulfilment of the requirements for a PhD award from your institution. I have read the thesis several times and carefully considered the conceptual clarity of the thesis as well as the originality and value of the scientific contribution made by the work reported there.

The thesis is extremely clearly written throughout. This is especially noteworthy given the complexity of the scientific ideas addressed in the thesis and the complexity of the design and analyses used to address and evaluate those ideas.

Chapter 1 of the thesis provides an introduction to the study of complex systems and related principles, the most important of which for this thesis are synergy and emergence. Chapter 1 also introduces the central claim of dynamic systems theories of human development and of the thesis work, that behaviour is initially unstructured and becomes increasingly structured, coordinated, and differentiated with development. A third idea introduced in Chapter 1 and that is fundamental to the thesis builds on the idea of differentiation, namely that behaviour and development are sensitive to context.

The empirical chapters of the thesis, chapters 2 through 6, present multiple research questions that build on these key ideas and evaluate those questions using data from a longitudinal study of 104 infants from 4 to 12 months. The empirical chapters are organised so that the initial chapters address relatively simpler research questions and the latter chapters address more complex, interactive research questions; although the work is very much concerned with interactions between different contextual factors and behaviours throughout, there is a careful building of this scientific story so that the complexity of ideas and their evaluation is progressive.



Mae'r Brifysgol yn croesawu gohebiaeth yn Gymraeg neu yn Saesneg. Ni fydd gohebu yn Gymraeg yn creu unrhyw oedi.

The University welcomes correspondence in Welsh or English. Corresponding in Welsh will not lead to any delay.

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Chapter 7 provides a summary of the thesis aims and findings and the contribution of those findings to the scientific literature. Chapter 7 also demonstrates reflection and evaluation, including limitations on the findings reported in the thesis. This last section in Chapter 7 is somewhat brief and summative, but nonetheless provides clear evidence of the capacity of the candidate to not only define and conduct scientific research, but also to evaluate it in a reflective manner.

The originality of the thesis rests not in one component or chapter, but rather in the sustained and coordinated evaluation of the hypothesis that infant limb movements and vocal production become increasingly specialized to contexts, or what the thesis calls tasks, and their demands. This is most notable in chapters 4 and 6, both of which build on the contributions of other chapters to examine interrelations between infants' actions and vocalizations, with chapter 4 more focused on interactions within the infant (i.e. coordination between different limbs and vocalisations and how that coordination changes across time in different contexts) and chapter 6 more focused on interactions between the infant and caregiver (i.e. coordination between caregiver and infant and how that coordination changes across time in different contexts). These chapters, together with the other empirical chapters, provide strong empirical support for the hypothesis that coordination across motor and vocal behaviour becomes increasingly specialised with development.

The longitudinal study that provided the thesis data thesis is unusually complex for a PhD thesis and reflects a large team effort. The thesis carefully notes the contributions from various team members. It is clear that the candidate, Zuzanna Laudańska, made substantial contributions throughout, including defining the research questions, collecting, coding, and analysing the data, and interpreting the results. We often consider independence an important criterion for a PhD, but the work reported here clearly required coordination with a large team, so we might instead want to evaluate the contribution and competence demonstrated through the PhD. The thesis provides clear evidence of both. Not only does the thesis demonstrate this explicitly through careful notes about the organisation, coordination, and completion of the studies, but it also demonstrates it explicitly through the clarity of writing. The excellent clarity of writing throughout the thesis is clearly grounded in detailed and extended empirical work.

I conclude that the thesis of Zuzanna Laudańska entitled "The development of motor and vocal coordination in infancy: dynamic systems approach" fulfils the requirements set in the Art. 187 of the Act of 20 July 2018 – Law on Higher Education and Science (Journal of Laws of 2023, item 742) and is therefore ready to proceed to the next stage of the evaluation, the thesis defense.

Sincerely,



Professor Merideth Gattis