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Thesis Abstract

This thesis seeks a better understanding on psychological processes involved in drawing and drawing development in children that is reviewed under the theoretical framework of Adaptive Interaction. The framework studies children's drawing through a utility maximization approach that derives its explanatory power from three components of human behaviour; ecology, utility and information processing mechanisms. To this end it adopts a utility maximization approach to framing questions about drawing and motivates theories that provide an explanatory and predictive account of children's adaptation of drawing strategies on a tablet. This is derived, in part, from the cognitive psychology of human movement control. As such, it raises the following questions: (1) "*How would children draw on a tablet given that they have cognitive and motor limitations?*"; (2) "*Why would children draw on a tablet given that there are limitations on tablet and drawing software?*" The framework helps to provide an explanatory and predictive account of children's adaptation of drawing strategies on a tablet. To answer this question, I conducted a series of laboratory experiments to examine how children aged between 4 to 11 years old adapt their drawing actions to their own motor variability and to extrinsic rewards. The idea was to see how children act as ideal drawing planners when choosing movement trajectories on touch surfaces. I derived predictions of the hypothesis from children's drawing on a touch screen with regions carrying reward and penalties. When a penalty region is placed near to a target region, adults are known to alter their motor plan. In particular, they shift their aim point to avoid the penalty region. The model predicts shifts in subjects aim point in response to changes of reward and penalty structures within the drawing environment. The result of my studies show that children make near optimal adaptation to subjective rewards, their own cognitive and motor limitations and to the limitations of tablet and tablets drawing software. The work seeks a better understanding of the psychological process involved in drawing and drawing development in children given motivational factors. The results indicate a developing sensitivity to utility and motor variability.