

Abstract of thesis entitled:

Effects of Sensory and Motor Experiences on the Implicit Mental Timeline

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Abstract

The intertwined relationship between temporal and spatial representations has been well established. Yet little is known about why individuals often conceptualize time as flowing along a lateral plane (i.e., linking past events to the left and future events to the right). It has been argued that such rightward mental timeline is associated with the sensorimotor exposure in one's reading and writing practices. The present work thus assessed whether the mental timeline can be causally shaped by sensorimotor experience. More importantly, it was the first attempt in existing literature to tease apart the roles of sensory and motor experience in temporal representations. By using motor and sensory training paradigms in the visual and haptic modalities, Studies 1 and 2 examined whether motor and sensory exposure per se can induce changes in space-time associations. In Study 1, motor exposure in the visual modality was shown to sufficiently determine participants' mental timeline; the same was not true for sensory exposure. Findings of Study 2 were in line with those of Study 1, that only motor experience in the haptic modality was found to significantly shape participants' mental timeline. Study 3 further investigated whether sensory exposure in the auditory modality can affect space-time associations; the findings however showed no significant change of mental timeline as a result of audio-sensory experience. Taken together, the results of the present studies demonstrated a causal link

between concrete bodily actions and abstract temporal cognition; they also highlighted the pivotal role of active motor experience in shaping the left-to-right mental timeline.

Keywords: Implicit mental timeline, temporal cognition, spatial cognition, sensorimotor exposure

摘要

大量研究文獻已指出時間認知與空間認知之間的緊密關係。然而，認知心理研究在橫向心理時間線(即大多數人會將過去的事件關聯於左邊空間，並將未來的事件關聯於右邊空間)這領域還在探索階段。有研究學者認為心理時間線與我們的閱讀和寫作習慣中的感知運動經驗相關。此研究旨在理解感知活動經驗能否直接影響我們的心理時間線。更重要的是，之前並沒有任何文獻探究感知經驗與活動/運動經驗這兩者在心理時間線中的個別影響。透過運用視覺和觸覺訓練，研究 1 和 2 探討了感知經驗與活動經驗可否獨立地影響受試者的心理時間線。研究 1(視覺)的實驗結果顯示感官和活動經驗兩者中只有運動經驗可以顯著地影響心理時間線。研究 2(觸覺)的結果與研究 1 的結果相符，即只有運動經驗能夠影響心理時間線。研究 3 進一步調查了感知(聽覺)經驗是否亦會影響時間與空間的認知關係，但結果顯示聽覺感知體驗對受試者的心理時間線沒有顯著影響。總而言之，本研究的結果確定了具體身體活動與抽象時間認知之間的因果聯繫。有別於以往的時間與空間認知實驗，本研究就活動經驗對心理時間線的直接影響提供了新的支持證據。

關鍵詞：內隱心理時間線，時間認知，空間認知，感知運動經驗