Neeuro 发布

通过游戏化和脑电图提升认知健康

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大脑游戏

参与刺激性和有目的的活动对人们提高生活质量至关重要。对于那些身体受限或活动机会有限的人来说，数字游戏可以为他们提供一种持续投入和精神活跃的方式。在美国国家科学基金会（NSF）的推动下，神经科学家和娱乐专家发起了合作[68]，开发数字游戏，以更深入地了解大脑功能，并提供新的工具来提升注意力和幸福感。

比如基于计算机的认知训练，它被发现可以提升老年人的记忆力和在日常任务中的表现[66-67]。

展望未来，健康和科技行业正在将更多的治疗游戏推向市场[69]，这可能会对那些追求认知健康和身心健康的人产生更大的影响。

基于 EEG 的认知训练

研究人员在数字游戏中使用脑电图（EEG）是神经科学领域的最新进展。许多研究已经证实了脑电图在数字游戏中的作用，并发现它在提高参与者的认知能力方面是有效的[1]。脑电生物标志物与认知功能之间有许多联系。例如，θ脑电波活动性（4–8Hz）与人的工作记忆之间存在高度相关性[70-71]，而β脑电波（14–30 Hz）通常与一个人注意力水平相关[72-73]。对于需要视觉空间能力的任务，激活α脑电波活动（9-13Hz）的参与者在经过基于脑电图的认知训练后，在心理旋转方面表现更好[77]。让人参与诱发这些脑电波的任务，有助于显著提高他们的认知能力[75]。

在训练过程中，可能对于认知超负荷而导致认知增益减少的可能性会存在一些疑问，但这可以通过使用基于脑电图生物标志物的自适应实时监测系统来克服。使用这样的方法，可以测量并有效控制心理疲劳，从而使参与者在游戏过程中拥有定制化的体验，以发挥最佳效果[74]。

总之，在认知训练中使用脑电图技术提供了实时的脑电波测量，并准确地显示了参与者的精神状态。认知训练计划中的自适应成分也增强了体验，从而有效地获得了最大的收益。

心灵直升机

心灵直升机游戏利用脑电图生物标志物关联研究以促进注意力的训练[72，73]。SenzeBand 可以实时测量玩家的注意力水平，这不仅为游戏得分提供了额外的维度，还可以定制自适应的训练计划，以提高他们的选择性注意力和注意力的释放能力。这些认知能力对于应对分心很重要，这样不重要的细节就可以被排除在外，人们最终可以专注于重要的事情[91]。这也有助于在一项任务或事件中长时间集中注意力。

玩家将扮演飞行员的角色，需要调动他们的注意力，让直升机升空，并为受困的幸存者执行救援任务。玩家需要保持他们的注意力，为幸存者投放包裹，并且释放注意力，以便直升机能够降落并营救幸存者。随着游戏的进行，直升机变得“更重”，更难控制，并将遇到更多的障碍物。

金字塔纸牌

金字塔纸牌游戏是经典纸牌游戏的修改版本，其中的游戏性已被证明可以改善认知功能，如短时记忆[78]。利用神经可塑性的概念，当玩家必须频繁激活他们的工作记忆来回忆纸牌的数值[79]时，大脑将创建或加强新的神经通路，因此即使在阿尔茨海默病（AD）的情况下也有改善的可能性[82]。

游戏要求玩家匹配两张加起来等于13的纸牌。玩家将激活他们的决策能力，因为他们决定首先采取哪种策略或途径，取决于他们的手头上的牌和金字塔中可用的牌。有了正确的战略决策，他们就不会遇到解锁新等级后没有牌可匹配的情况。与经典的金字塔纸牌不同，金字塔纸牌允许玩家将未使用的牌藏起来以备日后使用。然而，在纸牌是正面朝下的，因此他们需要记住存放的纸牌的数值。这需要记忆，任何错误的猜测都会导致分数惩罚。

多任务之王

多任务之王游戏是基于任务转换范式的构想[92]为了培养认知灵活性，帮助人们执行复杂的任务，如高效的解决问题和创造力[93]。

游戏独特地分为两个屏幕，两边都有任务要完成。当任务逐屏完成时，将授予积分。这意味着玩家必须完成屏幕1，然后转到屏幕2，然后返回屏幕1。要完成的任务性质不同，因此鼓励玩家快速有效地使用各种认知功能。例如，屏幕1可以显示需要心理计算的数学求和，而屏幕2显示需要玩家识别和分析不同图形形状的图形识别问题。随着玩家的进步，玩家在每个屏幕上解决问题的时间也会相应减少。

总结

我们正处于一个信息急剧增长的世界，充满注意力危机的时代。随着寿命的不断延长，人们认知衰退的时间比预期的要早。这些因素对于我们期望保持终身认知健康提出了巨大挑战。为了增强我们的认知能力，防止认知衰退，在坚持健康的生活方式的同时，进行有效的大脑训练同样重要。

近几十年来的科学研究一直倡导大脑训练的有效性。随着移动应用程序和电脑游戏在当今世界变得越来越普遍，关于健康、技术和游戏的融合也是如此。手机游戏与轻便的脑电波传感器相结合，让日常生活中的闭环认知训练成为可能，为每个人提供自适应的、方便的和强大的解决方案，随时随地进行有效的大脑训练。

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