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**Table 3:** Summary of known cognitive effects of approved analgesic medication

<b>Drug</b>	<b>Effect on cognitive function</b>	<b>Type of cognitive task</b>	<b>Type of subject</b>	<b>Reference</b>
<b><u>Opioids</u></b>				
Morphine	↓	Verbal processing	Healthy human volunteers	Kerr et al. (1991)
Oxycodone	↓	Attention, verbal learning, working memory, reaction time	Healthy human volunteers	Cherrier et al. (2009)
Misc. opioids	↓	Attention	Chronic pain patients	Sjogren et al. (2005)
Misc. opioids	↓	Reaction time	Cancer pain patients	Banning et al. (1992)
Misc. Opioids	↔	Concentration, verbal learning, psychomotor function and speed	Post-herpetic neuralgia patients	Raja et al. (2002)
Morphine	↑	Attention and psychomotor speed	Chronic pain patients	Tassain et al. (2003)
Oxycodone, fentanyl	↑	Visuomotor speed and coordination	Lower back pain patients	Jamison et al. (2003)
Morphine	↑	Attention and psychomotor efficiency	Chronic pain patients	Lorenz et al. (1997)
Morphine	↓	Operant learning and spatial memory	Rat	Wang et al. (2006)
Morphine	↓	Spatial memory	Rat	Ma et al. (2007)
Morphine	↑	Operant non-matching to position task	CFA-treated rats	Cain et al. (1997)
Morphine	↑	Operant non-matching to position task	CFA-treated rats	Lindner et al. (1999)
Morphine	↑	Operant attention task	Formalin-treated rats	Boyette-Davis et al. (2008)
Morphine	↑	Object recognition	Rat model of visceral pain	Millecamps et al. (2004)
<b><u>TCAs</u></b>				
Amitriptyline	↓	Memory encoding and retrieval	Depressed patients	Spring et al. (1992)
Nortriptyline	↓	General intelligence and psychomotor performance	Post-herpetic neuralgia patients	Raja et al. (2002)
Misc. TCAs	↔	General cognition (MMSE)	Depressed patients	Podewils and Lyketsos (2002)

<b>Drug</b>	<b>Effect on cognitive function</b>	<b>Type of cognitive task</b>	<b>Type of subject</b>	<b>Reference</b>
Clomipramine	↓	Recognition memory	Rat	Burgos et al. (2005)
Imipramine	↓	Visuo-spatial memory	Rat	Naudon et al. (2007)
Amitriptyline	↑	Spatial learning and memory	Rat model of neuropathic pain	Hu et al. (2010)
<b><u>Anticonvulsants</u></b>				
Gabapentin	↑	Memory retention	Mouse	Acosta et al. (2000)
Gabapentin	↔	Memory retention	Rat	de-Paris et al. (2000)
Gabapentin	↔	Spatial memory	Rat	Shannon and Love (2004)
Gabapentin	↔	Attention	Rat	Shannon and Love (2005)
Gabapentin	↓	Spatial learning	Rat model of diabetes	Lindner et al. (2006)
Gabapentin	↑	Concentration, memory and reaction times	Healthy human volunteers	Saletu et al. (1986)
Gabapentin	↓	Memory	Healthy human volunteers	Salinsky et al. (2010)
Gabapentin	↔	Attention, psychomotor speed, language and memory	Healthy human volunteers	Martin et al. (1999)
Gabapentin	↓	Psychomotor function	Older healthy human volunteers	Martin et al. (2001)
Gabapentin	↔	Memory and psychomotor function	Epilepsy patients	Leach et al. (1997)
Gabapentin	↑	Attention	Epilepsy patients	Mortimore et al. (1998)
Pregabalin	↓	Attention and arousal	Healthy volunteers	Hindmarch et al. (2005)
Pregabalin	↓	Episodic memory	Epilepsy patients	Ciesielski et al. (2006)
<b><u>Cannabinoids</u></b>				
Δ <sup>9</sup> -THC /cannabidiol	↔	Concentration and information processing	Multiple sclerosis patients	Wade et al. (2004)
Δ <sup>9</sup> -THC	↓	Spatial learning and memory	Mice	Tselnicker et al. (2007)
<b><u>NSAIDs</u></b>				
Ibuprofen	↑	Global cognitive performance	Elderly pain patients	Grodstein et al. (2008)

↑: Improved cognitive function, ↓: impaired cognitive function, ↔: cognitive function unchanged, CFA: Complete Freund's adjuvant, Δ<sup>9</sup>-THC: Delta-nine- tetrahydrocannabinol, Misc.: Miscellaneous, NSAIDs: Non-steroidal anti-inflammatory drugs, TCAs: Tricyclic antidepressants.