INTRODUCTION

The amygdala, a complexly interconnected limbic system structure located in the temporal lobe of the brain, is thought to play a central role in the expression of emotions (reviewed by Aggleton 1992). In rhesus macaques the amygdala has been associated with the development of social and emotional behavior (reviewed by Brothers 1990). When neonatal macaques received lesions to the amygdala they showed increasing socio-emotional disturbances including abnormal social interaction, absence of facial and body expression, and stereotypic behaviors (Bachevalier 1994). Amaral and colleagues reported that infant monkeys with bilateral amygdala lesions were still capable of interpreting and generating social behaviors (Prather et al. 2001) but failed to develop an appropriate fear response (Antoniadis et al. 2009), implicating an important role for the amygdala in regulating such responses (reviewed by Amaral and Corbett 2003, Amaral et al. 2008, Machado et al. 2009, Roozendaal et al. 2009). While the human amygdala has been well studied longitudinally in both normal and disease states, there is a paucity of information regarding amygdala growth during neurodevelopment.

Evidence from animal model systems indicates that endogenous opioids play an important role in neural and behavioral ontogeny (Zagon et al. 1982). The primate amygdala has been shown to have a high avidity for opioids. For example, high levels of [H]diprenorphine (DPN)-binding in the amygdala of healthy adult male cynomolgus monkeys (Macaca fascicularis) were...