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What Makes Face Recognition Holistic: Insight From Models

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Abstract: Traditionally, holistic processing of faces was believed to arise from a holistic perceptual representation. Recent work applying General Recognition Theory (GRT) instead suggests a decisional form of holism, where decisions about one part cannot be made independently of decisions about another part. We extend previous work using GRT analyses and show the same decisional locus for holistic processing of faces by people and one well-known face recognition model. We explore special cases of this model to determine what components of the model are sufficient to produce human-like data. But why do these models produce human-like data? Within the GRT framework, these models internally show violations of perceptual separability (indicative of perceptual holism) but no evidence of decisional holism. Yet GRT analyses suggest decisional holism without perceptual holism. Our results raise serious concerns about using the currently available GRT analyses to distinguish between perceptual and decisional holism in face processing.