

**Table S1.** Descriptions of retracted papers or those with editorial expressions of concern and list of other papers that test similar hypotheses and their findings. This table is not meant to be exhaustive but rather to give interested readers a starting point to finding other papers related to each topic. 'EoC' refers to an Expression of Concern; the eventual fate of these papers is not yet known. 'RETR' refers to papers that have been retracted from the literature.

Previous claims	Other empirical examples
<p><i>Group selection:</i> behavioral composition of spider colonies is driven by local adaptation that occurs at the group level. (EoC: Pruitt &amp; Goodnight 2014)</p>	<ul style="list-style-type: none"> <li>• Behavioral differences among colonies have fitness consequences (Wray et al. 2011; Blight et al. 2016; Bockoven et al. 2015)</li> <li>• Colony-level behavior and its relationship with fitness differ among populations (Bengston &amp; Dornhaus 2014; Segev et al. 2017; Maák et al. 2021).</li> <li>• These results suggest selection <i>can</i> occur at the group level; however, none claim local adaptation at the group level.</li> </ul>
<p><i>Individual niche &amp; task specialization:</i> Individual variation in behavior drives task specialization in groups (RETR: Grinsted et al. 2013) and trophic niche variation (RETR: Costa-Pereira &amp; Pruitt 2020). Specialists are more proficient at their tasks than generalists (EoC: Wright et al. 2014) facilitating the division of labor in social spiders (RETR: Holbrook et al. 2014)</p>	<ul style="list-style-type: none"> <li>• Reviews of individual behavior and task specialization (Loftus et al. 2021) with implications for social insects in particular (Jeanson 2019)</li> <li>• Individual niche specialization is associated with among-individual variation in behavior (Schirmer et al. 2019, 2020; Gharnit et al. 2020), which can vary among populations (Brehm &amp; Mortelliti 2021)</li> <li>• Evidence of positive associations between behavioral variation and environmental heterogeneity, i.e., a more diverse niche (Mortelliti &amp; Brehm 2020)</li> </ul>
<p><i>Social niche hypothesis:</i> among-individual behavioral variation increases with familiarity (RETR: Laskowski &amp; Pruitt 2014; RETR: Modlmeier et al. 2014b) generating benefits to the colony as a whole. (RETR: Laskowski et al. 2016)</p>	<ul style="list-style-type: none"> <li>• Social interactions associated with increasing among-individual behavioral variation (Jäger et al. 2019; Balsam &amp; Stevenson 2021)</li> <li>• However, other studies found evidence that social interactions have no effect or decrease among-individual behavioral variation (Carter et al. 2014; Laskowski &amp; Bell 2014; Jolles et al. 2016; Bierbach et al. 2017; Munson et al. 2021; McCune et al. 2018)</li> </ul>
<p><i>Behavioral type x behavioral type interactions:</i> Behavior of individual predator and prey influence the outcome of a predation event. (EoC: DiRienzo et al. 2013; EoC: Pruitt et al. 2012)</p>	<ul style="list-style-type: none"> <li>• Review of among-individual behavioral variation within a foraging context (Toscano et al. 2016)</li> <li>• Multiple different aspects of individual predator and/or prey behavior have been shown to influence the outcome of predation events (Belgrad &amp; Griffen 2016; Benjamin J. Toscano &amp; Blaine D. Griffen 2014; Chang et al. 2017; Griffen et al. 2012; McGhee et al. 2013; Sweeney et al. 2013)</li> </ul>

<p><i>Intra-individual variability:</i> Individuals vary in the consistency of their behavioral responses (i.e., “choosiness”) (RETR: Pruitt et al. 2011)</p>	<ul style="list-style-type: none"> <li>• Individuals consistently differ in intra-individual variability (Stamps et al. 2012)</li> <li>• Individual ‘predictability’ influenced the outcome of predation events (Chang et al. 2017)</li> <li>• Individuals consistently differ in responsiveness to a newly available food resource (Laskowski &amp; Bell 2013)</li> </ul>
<p><i>Keystone individual hypothesis:</i> the placement of certain individuals can have strong impacts on collective behaviors (RETR: Pruitt et al. 2013; EoC: Pruitt &amp; Keiser 2014) that persist even after those individuals are removed (EoC: Pruitt &amp; Pinter-Wollman 2015). If misinformed, these individuals can be especially costly to groups (RETR: Pruitt et al. 2015)</p>	<ul style="list-style-type: none"> <li>• Review of keystone individuals (Modlmeier et al. 2014a though some references cited therein may be retracted)</li> <li>• The behavior of certain individuals can have important consequences for group-level behaviors (Aplin et al. 2014; Hunt et al. 2019; Pinter-Wollman et al. 2016 questionable data have been removed from this paper; but theoretical modeling and other valid data still stand)</li> <li>• Informed leaders can help colonies relocate, and this role can be taken over by another individual when the original leader is removed (Annagiri et al. 2017)</li> </ul>
<p><i>Stated-dependent behaviors:</i> Prolonged food restriction decreases body condition and reduces repeatability of individual behavior (RETR: Lichtenstein et al. 2016)</p>	<ul style="list-style-type: none"> <li>• Diet composition during development affected patterns of among- and within-individual behavioral variation (Han &amp; Dingemans 2017; Royauté &amp; Dochtermann 2017)</li> </ul>
<p><i>Consequences of intraspecific variation on species interactions:</i> Individual variation in both behavioral (EoC: Keiser &amp; Pruitt 2014; EoC: Royauté &amp; Pruitt 2015; EoC: Start 2018a; Start &amp; Gilbert 2017 this paper has corrections made to the methods) and morphological (EoC: Start 2018b, EoC: 2019) traits determines outcome of species interactions.</p>	<ul style="list-style-type: none"> <li>• Reviews of the importance of intraspecific trait variation on ecological interactions (Bolnick et al. 2011; Des Roches et al. 2018)</li> <li>• Individual behavioral variation among predator populations indirectly influences lower trophic levels through changes in predator growth rate (Laskowski et al. 2021)</li> <li>• Individual behavioral variation in prey populations influences lower trophic levels when under predation threat (Sommer &amp; Schmitz 2020)</li> </ul>

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