top down pre-activation, with greater levels of pre-activation producing greater levels of behavioral facilitation. To the extent that accessing new, unpredicted lexico-semantic features increases the time required for word recognition, a proportional pre-activation scheme of this type should produce a linear reduction in processing time as lexical probability increases.[4]

In this *proportional pre-activation* account, just as in surprisal theory, successful lexical access is sometimes functionally equivalent to successful 'integration'. This is because, by accessing and passing up the relevant set of lexically-linked semantic and syntactic features, alternative hypotheses at the highest level of the generative model will be effectively 'explained away', and the most likely interpretation of the input will be successfully inferred. Critically, however, there will be other times in which new inputs *cannot* be explained at higher levels of the generative model. In such cases, this temporary failure in interpretation may recruit additional comprehension mechanisms (e.g. regressive eye-movements) in order to re-analyze or re-interpret the bottom-up input.

Conclusion

In sum, while surprisal theory provides a simple and compelling account of lexical probability effects during reading, we believe the empirical predictions of this model are incompatible with the available experimental evidence. In two behavioral experiments and a series of meta-analyses we have provided clear evidence for a linear relationship between lexical

[4] For the present experiments, the empirical predictions of the *proportional pre-activation* account are similar whether this pre-activation is allocated to individual lexical items or to distributed sets of semantic/syntactic features. However, we believe that feature-based predictions are an important component of this account, because they can explain classes of psycholinguistic phenomena in which words receive facilitation even when their lexical probability is effectively 0% (e.g. related anomaly effects; Federmeier & Kutas, 1999; Roland, Yun, Koenig & Mauner, 2012).