

Senior Researchers Unwilling to Collaborate With Juniors?

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At present, the field of scientific research is fast-paced and highly evolving. For a scientist, keeping up with scientific advancements is as important and exciting, as driving one's own research forward. The need to establish strong research collaborations is therefore imperative for continued progression and significance within a field of expertise. Researchers at the Dalian University Technology (DUT) recently analyzed patterns of scientific collaborations from the perspective of scholar's age (Wang et al. 2017). This study follows a previous investigation by the same group, focused on cross-sectional collaboration patterns. Large-scale analytics of 621,493+ scholars and 2,646,941 collaboration records in Physics and Computer Science published on Springer showed [academic-age-aware behaviors](#).

Behaviors Among Academic Age Groups

To categorize academic age groups as "Beginner", "Junior" and "Senior" scholars, the researchers used public scholarly datasets from 2011-2013. The study examined collaborations among different academic age groups within the same timeline, to assign categorizations. Furthermore, the study compared collaborations at two preceding time points of 1999-2001 and 1987-1989, with the present timeline. The study outcome

chiefly indicated that more young scholars were in Computer Science than in Physics (80%).

The study methods measured annual academic productivity based on the number of annual publications per year, at each academic age. Results generally indicated instability of both scholar's careers and dynamic productivity. Many had short academic careers with more than 30% stopping publications after the third academic age (Wang et al. 2017). Importantly, when collaborating with research partners, results indicated a [gravitation towards senior peers](#).

Accordingly, beginner scientists frequently collaborated with their mentors and lab groups, for gradual connectivity expansion. Senior scholars, on the other hand, maintained stable, steady relationships that remained consistent in the long-term. The study further indicated existing cooperation levels among scientists based on gender to academic discipline, scholarly interest, and institutional affiliation. The age-variable was specifically re-examined to provide deeper insights to academic collaborations and transitions. Statistically, of the 33,000 physicists in the American Physical Society (APS) database, only 2051 stuck around for a decade. In addition, only 100 computer scientists published papers regularly from an initial cohort of 60,000, indicating a higher dropout rate.

Effect on Research Collaborations

According to a study report on Nature Index, the more senior the scientist, the wider was their co-authorship network. With academic age, the number of collaborations and collaborations per paper appeared to increase. The salient feature of this study was that most collaborations were with scientists of similar age to the senior researcher. These findings do not, however, translate to multidisciplinary fields. More studies would allow a broader examination of the relationships between academic age and collaborations for a more robust conclusion. A previous study, published in PLOS one (Milojević 2012), classified referencing behaviors of authors according to academic "age", productivity, and collaboration. The study investigated cohorts of scientists at the same stage in their academic age, regardless of their biological age.

The 2012 study, which analyzed the collective behavior of authors as a group from 2006-2010, found interesting age-aware trends as well. Three author characteristics—the academic age, productivity, and collaboration level—defined a group of interest, in a given discipline. Initially, in astronomy, citation rates increased for authors who collaborated more, however, the results varied between fields. For instance, collaborations in astronomy and ecology showed larger effects than age, with the opposite observed in mathematics and economy. In the latter fields, authors do not usually collaborate extensively. Active collaborations in the fields of astronomy, robotics, and ecology led to their increased research front movement.

Incidentally, academic age was not a strong factor for the Modified Price Index (MPI, a measure of the speed of research). Senior authors displayed similar cutting-edge results to their work as their younger colleagues. The salient finding of the 2012 study was that

collaboration levels trumped academic age, as the most important author characteristic. Citation behavior was therefore independent of academic age. A possible limitation of the PLOS ONE study is its exclusive analysis of publications in core journals alone (Milojević 2012).

Final Words

To recap, highly productive and highly collaborative scientists possess characteristics that push the research front, regardless of their academic age. The picture of an out-of-touch older scientist does not seem to resonate within the PLOS ONE study (Milojević 2012). Although a research bubble that favors senior research collaborations is exemplified in the more recent study in Springer (Wang et al. 2017). Overall, unlike biological age, the concept of academic age is subjective and has no systematic measurement. While “academic age” forms via collaborations, publications, and productivity, biological aging in itself can affect publication and citation patterns (Gingras et al. 2009).

Although it is promising to observe no discrepancy by academic age on citation behavior (Milojević 2012), demarcation by academic age is problematic (Wang et al. 2017). However, *Milojević* examined more than five disciplines while *Wang et al.* investigated Physics and Computer Science alone. Inadvertently this indicates the need for a more comprehensive analysis to form a robust conclusion on this subject. Nevertheless, highly productive and highly collaborative scientists exist at any academic age. Meaningful scientific collaborations across various academic ages will, therefore, yield faster progress in varied disciplines of research.

References

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