Collaborator Conundrums

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> *Coming together is a beginning, staying together is progress, and working together is success*
> – Henry Ford

Collaborative science has become the gold standard for advancing medical knowledge.[1,2] Given the importance of a team-based approach in academic medicine, investigators must develop specific skills that foster productive collaboration in addition to their clinical or analytical expertise. Despite the average number of authors per PubMed-indexed article increasing from 1.9 in 1975 to 5.67 in 2016,[3] little instruction exists specifically addressing the challenges of collaborative academic output. As leaders of a multi-specialty outcomes research team, we have observed (and admittedly often committed) several collaborator behaviors that tend to stymie innovation, productivity, and efficiency. Through structured appraisal of these suboptimal behaviors, we have been able to improve the effectiveness and efficiency of our academic team. Here, following the format of others,[4,5] we use colloquial terms to present several behaviors that can hinder optimal functioning of the academic team. We then suggest practical countermeasures to combat these collaborator conundrums. Although we characterize the behaviors as representing a fixed phenotype, the problems are more often episodic and variably expressed by collaborators.

TYPOLOGIES OF COLLABORATORS

The Independent

Independents are typically diligent researchers who attempt to do all the work themselves. They have limited trust in others to perform; thus, they rarely delegate or involve other team members in decision processes. These collaborators are usually confident and historically productive, but prone to committing preventable errors due to a lack of seeking feedback from others. Although their solo approach avoids group dynamics that can decrease efficiency, they do not benefit from the collective creativity of individuals with different expertise. The Independent is also at high risk for career burnout.

The Thumbs Upper

The Thumbs Upper is a collaborator who offers little meaningful contribution to the work but "signs off" and tends to merely satisfy generic requirements for co-authorship rather than provide substantive input to a manuscript. Culpability for Thumbs Upper behavior may belong to the collaborator seeking a free ride to academic promotion or to the team leader who has involved a collaborator without appropriate expertise for the project. Team leaders may also feel pressured or incentivized to tolerate Thumbs-Upper behavior from senior figures, leading to gift or honorary authorship. This collaborator type is often complicit with the Independent, although this combination negates the advantages of collaborative writing.

The Decelerator

The Decelerator does not provide collaborative input in a timely manner, diminishing the academic output of the team. Decelerators may be inherently inefficient or preoccupied with other priorities. One salient example is that collaborators may be slow to provide input due to differential practice environments, e.g., non-tenure-track positions with greater clinical assignments. Although the Decelerator's input may be valuable, it must be truly crucial to counterbalance the disadvantage of inefficiency.

The Diversionist

Diversionists are opportunistic and seek to impose their own research agenda on the already agreed-upon project aims. This collaborator type often requests additional analyses or subgroup evaluations to address tangential academic questions pertinent to their own research or policy focus. Brainstorming future research ideas spurred by current work is an attribute of successful collaboration; however, preoccupation with side projects that stall the defined objectives of the project at hand hinders academic progress.

The Naysayer

The Naysayer consistently finds fatal flaws in fundamental aspects of the study design, population, analyses, or

interpretation. Naysayers do not generate healthy cynicism, but a pervasive attitude of negativity. Naysayer behavior may originate from inherent personality traits or from feelings of exclusion or disenfranchisement among the team. This type of collaborator may claim to be providing constructive criticism or to be playing "Devil's Advocate," but the Naysayers' nihilistic approach is not helpful because their criticism is not accompanied by suggestions for alternative approaches.

The Over-Editor

The Over-Editor provides extensive edits, many for personal phrasing preferences and other cosmetic changes. The Over-Editor is often intelligent and confident, but their propensity toward perfectionism jeopardizes their personal productivity and effectiveness within collaborative teams. The Over-Editor usually provides some quality suggestions for the work, but the value of their contribution is decreased by the low proportion of impactful edits.

The Sensationalizer and the Minimizer

Sensationalizers and Minimizers are foils with regard to interpreting and contextualizing study findings. The Sensationalizer uses grandiose verbiage to make sweeping claims about the impact of the work that reach beyond the scope of the results. In contrast, the Minimizer (who may also be a Naysayer) is paralyzed by study limitations and refuses to interpret the results in a clinically meaningful way. Having to temper a Sensationalizer or embolden a Minimizer can create conflict for other collaborators.

Countermeasures to Collaborator Conundrums. Successful academic teams comprise professionals with varying skills and tendencies. Most of the behaviors above represent the maladaptive extreme on a spectrum of important teamwork skills. In order to preserve the unique and complementary skills of the academic team without committing these Collaborator Conundrums, team leaders should recognize these problematic behaviors and enact effective countermeasures. We recommend the following strategies to promote effective and efficient collaboration on academic output.

Involve Collaborators at the Right Time

Collaborator input is often sought too late, particularly by Independent investigators. This deferred approach limits transparency, diminishes the usefulness of collaborator expertise, and facilitates Thumbs Upper behavior. Further, failure to achieve early consensus may result in inefficient modifications to the study approach after extensive time has already been invested. Conversely, seeking collaborator input too early can be inefficient and promote maladaptive behaviors from Diversionists and Naysayers. Our strategy to timing collaborator involvement is as follows: After the lead and senior investigators formulate the study

question and outline a general approach, collaborators convene in a time-limited, focused session to clarify the objectives and methods and prepare templates for presenting potential results. This session culminates with the development of a scientific abstract for the project [IMRAD format (Introduction, Methods, Results, and Discussion)]. The lead and senior authors then work with analysts to execute the study plan and generate an initial interpretation of the results. Then, collaborators convene again to discuss interpretation and implications of the results, cooperatively fostering appropriate synthesis of the study findings and attenuating the individual tendencies of Sensationalizers and Minimizers. Finally, the manuscript is written collaboratively by assigning action items with explicitly defined deadlines to enhance accountability to agreed-upon deliverables.

Focus Collaborator Input to Their Expertise

An ideal collaborative team should have members with different complementary skills. The team works most efficiently if collaborators are included throughout the development process with specific tasks matched to their expertise. Although a second (or third) set of eyes can improve clarity and reduce mistakes, there is likely a threshold above which the incremental benefit is small and does not economize collaborators' time. Strong academic team leaders should ensure that collaborators are tasked with action items that maximize their expertise and that collaborators' efforts are not over-duplicated.

Set Realistic but Aggressive Timelines

Keeping a realistic but aggressive timeline is vital to fostering academic efficiency. Enforcing a quick turnaround generates pressure for the Independent to delegate, and will keep Decelerators, Diversionists, and Over-Editors focused on providing high-impact input for the current task. National conference and grant cycle deadlines serve as important external anchors in developing appropriate timelines. A project manager can be helpful in executing this countermeasure by tracking timelines for deliverables and facilitating communication among collaborators. With expectations for authorship outlined clearly beforehand, a realistic but aggressive timeline will ensure that the study team comprises only collaborators with adequate interest and bandwidth for each project.

Avoid Collaboration for the Sake of Collaborating

Academic science teams are becoming larger. However, too many collaborators can reduce the efficiency and quality of the output. Team leaders are charged with the challenging task of maximizing creativity and inclusivity while minimizing inefficiency and redundancy. We advise limiting study teams to

the number of collaborators needed to provide unique and complementary expertise—and involving senior figures based on substantive contributions rather than as a gesture of respect or to facilitate publication. Operating a smaller group or sub-team is recommended in situations where engaging the whole team does not add compelling value.

CONCLUSIONS

Academic teams are challenged to economize their time and maximize their productivity. Recognizing unhelpful collaborator behaviors and executing proactive countermeasures is a key to fostering effective, efficient, and fulfilling collaboration.

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