How to Build and Maintain a Multi-disciplinary Team

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1. Better Recognition for Multidisciplinary Research

http://www.sciencemag.org/careers/2014/07/better-recognition-multidisciplinary-research

By Elisabeth PainJul. 17, 2014

The time has come for funding bodies and research institutions to give multidisciplinary researchers due credit when applying for grants, jobs, and promotions. That's the conclusion of an **opinion paper** released in June by the **Life, Environmental and Geo Sciences Committee of Science Europe**, a Brussels-based association of more than 50 funding bodies and research institutions from across Europe that aims to promote the development of a **stronger, more inclusive, and more open European research system**.

"Young scientists entering multidisciplinary research need to be aware of various challenges that lie ahead in terms of career development. They have to recognize the importance of 'visibility,' from early on in their careers," writes **Dirk Inzé**, in a statement on behalf of the Science Europe Life, Environmental and Geo Sciences Committee. Inzé is the scientific director of the Department of Plant Systems Biology at the Flanders Institute for Biotechnology (VIB) at Ghent University in Belgium.

Unfortunately, academic employers, promotion and appointment committees and research funding organizations still use these simplified metrics when evaluating the capacity of a scientist to become a future leader of a research group.
—Dirk Inzé

Research in the life, environmental, and geosciences has come to rely on high-throughput technologies and computational techniques, the Science Europe committee writes in the

opinion paper, and such technological advances have ushered in an era where data-intensive science takes center stage and where researchers must increasingly cross disciplinary boundaries to work on large collaborative projects.

Unfortunately, the committee writes, necessary changes in the way researchers are evaluated are lagging. The paper denounces "the lack of clear evaluation metrics for scientists working in multidisciplinary teams," noting that "[t]he absence of such metrics already has a negative impact on career paths, as many scientists hesitate to participate in multidisciplinary research."

For those who do enter multidisciplinary research, current authorship standards—which, in the life sciences for example, identify the first author as the researcher who did the most work and the last author as the supervisor of the project—inadequately capture the contributions of different team members, which often are equally valuable. The problem is especially acute for those "contributors from 'supporting' disciplines—for example those who deal with data analysis and integration and are not authors of the original hypothesis and/or grant holders," writes Inzé, on behalf of the committee. Those authors "tend to be placed in the middle of the author list, with no further explanation about their specific input." To make recognition yet more difficult, different disciplines often use different publishing standards, the opinion paper notes.

 "Unfortunately, academic employers, promotion and appointment committees and research funding organizations still use these simplified metrics when evaluating the capacity of a scientist to become a future leader of a research group," Inzé writes. Furthermore, today's multidisciplinary scientists "are hampered in applying for career development grants. This, in turn, impairs their career advancement as research group leaders, and means that they may be denied funds for future research."

In the opinion paper, the committee recommends that funding bodies and research institutions value multidisciplinary activity as further evidence of a researcher's capabilities and achievements. They encourage evaluators to value the contributions of scientists whose work is primarily to generate, analyze, model, or curate data, by using "**webometrics**"—for example, how often data and applications have been downloaded—alongside more traditional metrics. Finally, the committee would like to make it compulsory for researchers to provide a detailed account of their contributions to each piece of work—e.g., whether they designed the experiments, developed analytic or modeling tools, or wrote the paper—when applying for grants, jobs, tenure, or promotions.

In this respect, some countries are ahead of others. Jeremy Frey, a professor of physical chemistry who co-chairs the interdisciplinary **computationally intensive imaging research group** at the University of Southampton in the United Kingdom, and who is not part of the Science Europe committee, writes in an e-mail that researchers working across disciplines may find it more difficult to get funded because their grant applications fall between disciplinary areas, or because they must meet the standards of more than one. Nonetheless, "[i]n the UK the funding agencies up until the cash crunch were enthusiastic

promoters of interdisciplinary work, and this enabled much new work to start. Universities in terms of reward (promotion) had a lot of catching up to do, to make their evaluations fit for purpose; many now have," Frey writes. Even as funding becomes more difficult, Frey expects that "the truly interdisciplinary work will stand out from the crowd."

Some types of evaluation, Frey says—including nationwide reviews such as the 2008 **Research Assessment Exercise** or the 2014 **Research Excellence Framework** (REF), which have both aimed to assess U.K. universities based on the quality of their research in order to determine how much government funding they should each receive—"have a tendency to act against the interdisciplinary researcher." In the REF evaluation, individual research faculty members had to list up to four of their best **research outputs**—journal articles, authored books, patents, software, etc.—to their departments, for submission by their university. Outputs from interdisciplinary researchers may not easily fit within one of the REF evaluation panels. And how well a researcher does in this evaluation influences not only the overall score of her department—hence, its reputation and its funding—but also how successful the researcher will be seen within the department, with possible career consequences.

What can young scientists, wherever they are, do to offset the potential downsides of working in a multidisciplinary field? First and foremost, they must act to boost their visibility, Inzé writes. "This can be achieved by networking with crucial scientific partners, presenting their work in conferences, and working in leading multidisciplinary research infrastructures. In addition to scientific results, young scientists should seek to publish scientific outputs such as methods, algorithms, models, ontologies, repositories, tools and software."

Inzé also encourages young scientists to join organizations such as the **European Council of Doctoral Candidates and Junior Researchers**, where they can liaise with think tanks and science-policy organizations in support of policies friendlier to interdisciplinary research and researchers. "These combined efforts can help to bring about change that will lead to clear evaluation metrics able to guide the careers of scientists working in multidisciplinary teams," he says.

More needs to be done to support the careers of young multidisciplinary researchers, Frey argues. "In the UK there have been several initiatives that were fundamentally inter-disciplinary, e.g. the **e-Science** and **Digital Economy** [t]hemes," he writes. While the e-Science program, for example, "really began to create researchers who had a truly interdisciplinary outlook," its success was short-lived: Just as the first cohorts of students were hitting the job market "and getting very good positions, the funding to train their successors was cut back," Frey says. "We need to take a longer term view." He notes that already there are signs in the United Kingdom of a desire to continue supporting interdisciplinary training and tackle global challenges with an interdisciplinary approach.

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2. Guiding Principles for a Successful Multidisciplinary Research Collaboration

Lindsay C Lustig, Romina Ponzielli, Peter S Tang, Sarmitha Sathiamoorthy, Ichiro Inamoto, Jumi A Shin, Linda Z Penn & Warren CW Chan
FUTURE SCIENCE OAVOL. 1, NO. 3COMMENTARY

Solving the most critically important scientific problems or engineering groundbreaking technologies often requires teams of researchers from different backgrounds to work together. One might need to make new materials (chemistry), characterize and understand the properties of the material (physics), assemble the material into a useful device (engineering), address the biological problem to be solved (biology) and demonstrate utility in patients (medicine). A single laboratory is unlikely to have all of the expertise necessary to address complex problems that can make a significant impact on society.

The merging of fields also makes otherwise impossible goals achievable, often in a timelier manner. This has led many granting agencies, academic and commercial institutions to encourage the development of interdisciplinary teams [1–3]. As a result, there has been an increase in the quantity and quality of publications combining the work of authors with diverse backgrounds. In the collaborative setting, trainees and principal investigators (PIs) alike become immersed in different areas of study, research styles and how fields beyond their own familiar worlds operate. These aspects introduce challenges to ensuring a team is productive and moving toward their research objectives. However, when the team is working well, this can be a particularly useful learning experience, leading to exceptionally well-rounded trainees that will learn from a variety of experts. While the idea of assembling the best-of-the-best scientists and engineers to address an important problem in society is of merit, the practical aspects of working together can be challenging. Ensuring success hinges on effective communication – knowing what and how best to convey thoughts and opinions.

Our three research laboratories have different research experience, interests and backgrounds: we have merged together on a project that involves the identification, delivery and assessment of small peptide cancer drugs. Over the last 4 years, we have worked together to characterize and evaluate these drugs through shared funding from the Collaborative Health Research Program in Canada. Through this joint project, we have learned to be effective collaborators with one another, started to publish our results [4], and through the years, we have shared with one another experiences of good and bad collaborations. While there are a number of excellent commentaries to describe how teams in research work together [5,6], we thought an article that specifically focuses on

practical tips that are important in building strong team dynamics and ensuring that the multidisciplinary research project is conducted in an efficient and productive manner in an academic setting would be useful for guiding other academic collaborators. Additionally, some of these principles may be further extended to include networking and academic-industrial collaborations.

Learn the language

One of the biggest challenges in working together is building a communication strategy that is aligned with all researchers. Each research discipline, and often each laboratory, has unique 'language'. Occasionally, the same terms can be defined completely differently depending on the discipline or even from one research group to another. Commonly used jargon and terms should be clearly defined and collaborators that are relatively new to your field may require more thorough explanations. So, patience in explaining concepts is required.

Address differences in operation

The way laboratories operate can differ significantly. For example, biologists, chemists and physicists tend to use the principles of 'hypothesis' to drive research projects, but many engineers do not use this research model. To address these differences, a simple communication strategy should be developed at the beginning of the collaboration. All PIs should discuss and develop useful shared reporting tools to bridge the differences between the researchers. An example is a monthly report with objectives, procedures, experimental results and challenges. These reports can be circulated before monthly meetings. Communication is the key to developing a productive team.

Make an operational plan

Solidify critical discussions by creating a policy document for the collaboration at the start of the project. Each member should sign off on this agreement. If a document is not created, researchers tend to forget the agreed-upon collaboration principles, which can potentially lead to problems during the course of the project. Some of the points of discussion that should be included in a policy document are:

- • What is the role of each party on the project and what are the objectives of each party in accomplishing the goals of the project?
- • How will each party train its researchers on the project?
- • How can the project be communicated between the different research groups?
- • What strategies will be used to address problems with the project and personnel?
- • What are the privacy issues for each party? Can the researchers discuss the project with other members of their own research laboratories? If there are patents created, how will they be reported?
- • What are the different timelines of each group's contribution to the team effort, and how will milestones and expectations be managed?

Outlining the principles of engagement and reporting can form the groundwork for productive communication and discovery of novel advances.

Share the credit

Develop a system to provide appropriate credit to all researchers who participate in the project. If the outcome of the study leads to a paper, how will authorship be organized? Who will be responsible for writing the manuscript(s), and what will be their emphasis? If there are patents created, who is included on the patent? Some of us have experienced a PI who wants all of the credit but does very little work [7]. The allocation of credit should be discussed early among all the contributors. This discussion should extend to trainees in addition to PIs and will often be initiated by the latter. Much overlap exists with respect to the reasons the PIs and trainees are involved in a given research collaboration. For instance, both PIs and trainees are united by the common drive to disseminate high-impact, quality data, but there are usually additional interests that may differ between the parties involved, such as a PI who is preparing his or her promotion package and needs to publish papers in certain types of journals. If these are considered, it will likely improve the collaborative experience for all, and importantly, increase productivity and impact.

Consider the trainees involved in conducting the work. Authorship is of great importance to them as well, for instance, for completing a degree or building one's curriculum vitae. Collaborators should discuss who will be credited with authorship and the order of names appearing on the different published works that arise as a result of combined efforts. Although this can be an uncomfortable topic and is undoubtedly a challenge to decide early in the process, ensuring constant and consistent communication on where individuals stand on authorship, particularly as the projects evolve, avoids unnecessary worry and eliminates misguided expectations on all parts. Remember, as with any endeavor, if individuals know the reward, they will adjust their expectations and be more motivated to do the work.

Share the money

Once a team has successfully obtained funding for a project, it is important from the onset that all PIs agree to share the financial resources. There are cases where the lead PI decides to control all the funding rather than share it from the onset and will try to use the money to control the authorship and project objectives. Such behavior can sabotage a good collaborative project. Currently, most granting agencies do not have a checks-and-balance system, and this behavior can propagate. All parties should develop a financial plan that is beneficial to the project as a whole such that the lead investigator cannot and should not use finance as a way to manipulate authorship on patents, talks and papers. A budget plan should be written to indicate which laboratory does what and how much money is required to get each part of the project done. Everybody should learn to be reasonable as the funding is not bottomless.

Discuss project plans & time management

At the beginning of any collaboration, it is important to develop a project plan. Researchers should indicate the objectives of each facet of the project, the long- and short-term goals, procedures and activities, as well as who will be needed to perform each of the activities. Each project should have tangible milestones and deliverables that are clearly identified and written. This plan will identify each researcher's activities, allow subprojects to be evaluated during the course of the bigger project, and allow the team to modify goals as the project evolves over the course of the experiments. It also removes any ambiguity regarding who did the work. Related to this is the importance of understanding the amount of time that is needed to complete different experiments. Depending on the field of study or the specific experiment, more or less time might be required to achieve results than researchers outside of the field would expect. Taking the time to explain what is involved in performing each task helps to keep everyone on the same page and encourages realistic expectations.

This is also important when assessing, for instance, the appropriate times for trainees to complete their graduate degrees or postdoctoral studies. In many collaborations, the work completed by one individual relies on the results of another. To avoid situations where the progress of one trainee's course of study is stalled due to the completion of anothers' task, any potential setbacks should be considered in advance with feasible timelines devised and backup plans in place. It may be wise for a trainee to work concurrently on an additional, unrelated project in case the collaborative project does not go as expected.

Hold frequent meetings

It is highly recommended for groups to hold routine meetings, for example, once a month. It is useful for each laboratory to submit a short activity report electronically for all team members to view beforehand. These activity reports allow the team to follow the progress of each project, evaluate the data and offer suggestions to help plan downstream experiments. Having more eyes and ears present, particularly from different disciplines, can bring to the forefront various assumptions that are being made in planning experiments, and stimulate conversations regarding how best to establish criteria for moving forward or interpreting datasets. Regrouping on a regular basis serves as a continuous reminder of the team's end goal beyond an individual experiment, because several persons are involved to offer input and help maintain focus. This in turn translates to greater research productivity. Activity reports also provide a regular platform for trainees to present their work and, in doing so, accelerates their ability to effectively communicate their research to persons of different scientific backgrounds and levels of understanding. The monthly meetings can also be an opportunity for trainees to participate in discussions regarding strategies for drafting grant applications, and the planning and considerations therein. As an integral part of the research process, it can be of great benefit for the trainees to actively participate in the planning and execution of securing funding. In addition, holding one or two meetings per year in person reinforces the connections between the team. This familiarity will continue to be informally driven by trainees, as they feel comfortable picking up the phone and calling teammates in the other laboratories.

Encourage open communication: be fair & respectful

It is very important that every aspect of the project be dealt with fairly. A failed collaboration often results from a researcher not being given proper credit or enough money to do the project. Should one of the collaborative members feel that there is inequality in the project, it must be addressed immediately. As mentioned, we suggest that the partitioning of funding and assignment of credit be discussed early and ideally, be mapped to the project plan. It is imperative for everyone to be open and honest within the team, and it is equally important for this to be done tactfully. For instance, if a project is not working, the researchers should discuss it. If there are issues with funding or problems with the personnel, the PIs should discuss it. This may seem obvious, but often team members choose not to initiate these critical conversations. When certain issues that are sensitive arise, it is important for the PIs to come together and talk privately prior to discussing their decisions with the team. The same should be said about the trainees who are on the project. Lastly, the relationship between a PI and his or her trainee who is participating in a collaboration must always be respected. Working alongside several PIs can provide an abundance of invaluable opportunities to learn and enhance the trainee experience. However, it also means managing the needs of more than one supervisor, and unfortunately the potential for conflict should another PI overstep his/her authority. Such issues can be avoided if all parties involved appreciate that although group discussion with respect to a trainee's direction in a project is imperative, it is ultimately the trainee along with the PI who make the final decision. Having a PI directly demand tasks from another PI's personnel will inevitably create strife that could easily be avoided.

Conclusion

The benefits of collaboration are vast [**3**,**6**]. Some will be obvious from the onset of the project, while others may go unrealized until months and years later. In a collaboration, the researchers should work in synergy, complementing one another to complete the essential toolset necessary to achieve the end goal. The merging of diverse fields can yield breakthroughs in a speed unachievable if those contributors were to work independently. The value of a collaborative project extends to training highly qualified personnel and expanding the breadth of knowledge of even the most seasoned expert involved, which can spill over and enhance other research endeavors underway or in the future. Like many undertakings with great potential, collaboration in science can be one of high risk in addition to high reward. Effective team management and open communication from the very first discussion will maximize the likelihood of success and productivity.

Financial & competing interests disclosure

3. A Practitioner's Perspective of Multidisciplinary Teams: Analysis of Potential Barriers and Key Factors for Success

https://psyct.psychopen.eu/article/view/145/html

Irina Roncaglia

[a] The National Autistic Society – Sybil Elgar, London, United Kingdom.

Abstract

The concept of Multidisciplinary team working is well established in the literature within health and social sciences, as well as in the last decade within sport science teams. Knowledge and expertise that stems from different disciplines, which aim to be complementary and enriching can bring great benefits and potentially positive outcomes to clients, teams and organisation as a whole. However, little has been written and reported on the barriers and risks that stem from this multidisciplinary approach. The aim of this paper is to highlight and reflect on the potential barriers and risk factors that arise within this concept of multidisciplinary teams approach and to present and reflect on some corrective treatments. Suggestions which function as critical factors for success are then presented. This paper solely reflects on the author's experiences in working within multidisciplinary teams over a period of time of twenty-four months across a number of health, education and social care providers in the UK. A framework is suggested in order to better understand and ultimately address some of the challenges faced by this approach. Furthermore the paper proposes drivers for positive change which are highlighted in this context.

Keywords: multidisciplinary, team working, interdisciplinary, person-centred, group dynamics

Department of Psychology, South-West University "Neofit Rilski", Blagoevgrad, Bulgaria

*Corresponding author at: 24E Grosvenor Rd W4 4EG, London, United Kingdom. E-mail: irina@roncaglia.co.uk

Introduction - Background

The concept of Multidisciplinary teams (MDTs) are a well-known way of working which sees both health professionals across the disciplines integrating in their work and approaches when considering collaboratively an individual treatment plan for a range of clients. An MDT is formed by professionals from the healthcare field and allied disciplines who are seen as collaborating in the formulation of recommendations that aims to facilitate the quality of provision-care for clients (Department of Health, 2015; Mental Health Commission, 2006). According to Moss (1994) within Mental Health provisions, multidisciplinary teams enable three key functions: a) continuing proactive care for those affected by long-term mental health issues, b) 24/7 care during support, intervention and treatment before and during potential crisis, and c) organised responses to requests for care. As the definition highlights, multidisciplinary teams seek to enrich the understanding of the client and the context in which the client operates/functions by integrating, and interrelating different perspectives to the formulation of a client's case with the common aim and goal of a comprehensive programme and treatment plan to the issues presented. The specificity of multidisciplinary teams lies on the enriched understanding of an issue which stems from different disciplines and aims, with their specialities and expertise, to come together towards a common treatment and resolution to the issue. Professionals designated to MDTs can stem from a range of disciplines from the health care professions and can include practitioner psychologists, speech and language therapists, occupational therapists, psychiatrists, specialist nurses, physiotherapists, nutritionists; and the list is not exhaustive. Within sport and science teams it can also include sport scientists, masseurs and personal trainers as well as medical doctors. The richness of their knowledge and expertise, through assessments, design, delivery, monitoring and evaluations of programmes, aims to provide a person-centred plan which holistically can suggest treatments to resolve experienced issues.

Despite some critique on the actual effectiveness and challenges for resource allocations (Ke et al., 2013), multidisciplinary teams have been part of the health and social care industry for a number of years and very much have risen from a move towards a more person/client centeredness way of working, where the main drivers for success have been identified as *collaboration* and *co-operation* in the pursuit of a common clear aim (Barr, Hammick, Koppel, & Reeves, 1999). Whilst the client/person sits at the centre, multidisciplinary teams assess, design, deliver and monitor plans and interventions for

the benefit of the client/person. This climate of collaboration and co-operation needs however to be *actively pursued*, there where often conflicts and competition present as potential barriers. Ke et al. (2013) in their systematic review of multidisciplinary effectiveness have also suggested that multidisciplinary teams work demands considerable organisational, management and funding in order to secure that relevant professionals can actually attend, that key client's information is collected, and ultimately that all information is discussed by the specialist professionals throughout this process. In order to better understand multidisciplinary teams work and its potential barriers, a better definition and understanding of these risks need to be explored and understood. By better understanding these barriers, it is hoped that associated resolutions can be shared for more effective MDTs work.

The study of human and social psychology can shed light on the characteristics of both individuals and group dynamics which can be very useful in better understanding how multidisciplinary teams work. Clark (1993) suggests that placing people together coming from different disciplines, it is not a guarantee for the emergence of shared understanding. The nature of conflicts can often be experienced by members of the group in a personal and quite idiosyncratic manner, often differently experienced depending on particular professionals involved and/or the nature of the issue to be addressed. Whilst general conflict is recognised as a potential universal barrier, it is more the quality of the experienced conflict that can determine (or not) successful collaboration. Indeed research suggests that a level of healthy conflict is necessary in keeping MDTs alive. It is also considered a key element in the process towards positive change and subsequently growth and rejuvenation (Berg-Cross, 2000; Brown, 2000). This paper aims to clarify these barriers by reflecting on the author's personal experiences in working with a number of multidisciplinary teams where location, time, resources, communication, level of expertise can all give rise to multiple interpretations of key definitions and can shape a number of potential idiosyncratic barriers whilst trying to achieve a desired positive common outcome.

Method

Reflections were collated and formulated by the author through reflective personal notes/diary from attendance to a number of professional review meetings involving various professionals from Education, Health and Social Services from over 15 Local Authorities in UK and associated CAMHS services. In addition, reflective notes were collated through working experiences from in-house services through bi-monthly multidisciplinary meetings over a period of over twenty-four months which included professionals from psychology, speech and language therapists, occupational therapists, lead teachers, specialist behavioural nurses, psychiatrists and social workers. A qualitative thematic analysis of this data and reflections was carried out in order to identify relevant factors characteristic of MDT work. These factors were then clustered under main themes. These are discussed in the next sections.

Results - Identified Risk Factors: Inhibitors, Conflicts and Boundaries

Conflicts can take place between individuals, between the individual and the team and also between teams. Multidisciplinary work and approaches are fertile areas for these types of conflict to emerge (Reid, Stewart, & Thorne, 2004). Pirrie et al. (1998) in their work on multidisciplinary learning within health care teams on their first year course suggest that specific professional groups were expressing concerns related to a lack of opportunities to consolidate their professional identity within their own discipline. Issues of professional boundaries can stem when a number of professionals from different disciplines come together; boundaries that are both usually defiantly protected and yet in need to be permeable and flexible for a multidisciplinary team work to be successful. It is not unusual for different practitioners within the same discipline to significantly differ in their approaches and treatment plans (Reid et al., 2004).

In addition, practitioners are charged with integrating advice from different disciplines, but often have their own philosophies and opinions which have stemmed from a wide range of experiences that undoubtedly will, at some point, affect their decision making process and subsequent practices. A barrier that emerged from the analysis and not to be underestimated is the complexity of the context and 'organisms' of which the client is part of, namely his/her family and extended family members, carers/guardians and larger organisations such as those who are responsible for funding the placements and provide support. Often un-clarity of who is doing what, or who is *responsible* for what, or perceived to be responsible for, can cause significant amount of conflict and even resentment; resentment for not reaching timely results or resentment towards the system. These risk factors are discussed in more details in the next section, with a discussion and reflection on the following themes: 1) communication barriers, 2) resources, 3) size and 4) ambiguity and interdependence.

Communication Barriers: What and How We Communicate

This risk factor has been identified as significantly compounding to the sense of conflict, and tension that is often characteristic of multidisciplinary teams. It can stem from a variety of sources including personal and professional differences, differences in knowledge base and very much isolated to each discipline, either sporadic team meetings or meetings where not all professionals are actively and openly participating in constructive discussions, analysis and reflections.
Communication barriers can stem from a lack of shared and clear aim and where personal goals in promoting each professional discipline and individual perspectives become the priority. Rather than focusing on the person/client centeredness and related needs, the focus can at times quickly shift to the individual professional perspectives. Often a common feature of experts is their confidence in their opinion/approach stemmed from a longstanding working/practice experience, training and knowledge (Reid et al., 2004). This confidence can often leave little space for the acceptance of others' opinions and more generally for constructive conflict resolutions. Interestingly though, whilst cohesion can lead to better productivity, satisfaction and decision making, it is also suggested that within multidisciplinary sport group dynamics, conflict conditions do not necessarily equate to under-performing (Lenk, 1969). Therefore rather than cohesion, we can talk of homogeneity and heterogeneity. Both will be explored further as part of key success

factors.

Communication barriers can also be experienced when the client and his/her family members become (as best practice suggest) the centre of these discussions. Conflict conditions arising from multidisciplinary teams can often significantly displace the trust of the client and its family members, translated into *us* and *them* rather than a *team* working together for and more importantly towards a common purpose where the client sits at the centre. Family members and carers are also individuals with their own opinions and experiences which can yet add another dimension to the potential conflict and misunderstanding.

Communication barriers are manifested by often an inability to openly listen to other professionals' perspective and an inability to willingly tolerate and trust each other's perspective in the pursuit of a common goal/aim which clearly needs to be defined at the onset. Furthermore, language used by professionals can have its own syntax and definitions which are closed to the particular professional group in question. On the surfaces this phenomenon can be underestimated whilst in effect it can lead to a number of misinterpretations and confusion. Perhaps the lack of this clarity at the start is what needs to be better clarified and agreed.

Another risk which emerged from the author's reflections is known as triangulation, alliances and coalitions. There might be instances, where in order to deflect conflict amongst professionals and clients, alliances are formed between two or more people *against* others, so as to create 'partners in action' whilst it only creates an atmosphere of conflict and alienation. In fast changing dynamic groups of professionals stemming from different but converging disciplines, these potential barriers need to be addressed with skilful negotiation, so as to ensure that no members of the group are feeling 'left out' but that true collaboration and co-operation is nurtured.

Resources: Accessibility and Availability

This is another potential source for conflict which emerged from reflection and analysis and encountered within multidisciplinary teams. Current financial hardships have significantly streamlined services where often long waiting lists have become the norm rather than the exception. When experts are consulted, they are often limited by the resources available and allocated to them, fragmented working patterns – often employed on a part-time basis – or subject to a high proportion of staff turnover and fragmented service provisions, which as a result, can lead to communication difficulties. Key information has not been passed on, or in worse cases, it has been missed altogether. The information sharing process is key, but this again requires a certain level of resources which need to be timely accessible.

Size: How Many Members?

Group size is a well-known factor in social science to be contributing to conflicts. As the size of the membership increases so is the shifting of responsibility and as a consequence, group productivity. Members of the group may increasingly feel invisible and de-

personalised leading to a known phenomenon called *social loafing* (Karau & Williams, 1993). Furthermore, when more than one professional works within the same discipline, potential issues of boundaries and territory can ensue where members of the group may feel threading on each others with a growing result of lack of clarity and productivity. Through the analysis the size of MDTs seemed to be a significant contributing factor to the success of intervention/plan. The absence of a lead professional within MDTs was also observed in some cases to be an important critical factor for success. And sometimes the unwillingness to embrace and accept a lead professional from a different discipline or the lack of training necessary to ensure this type of work and approach could lead to challenges. The larger the groups are and the smarter and tighter organisational dynamics need to be so as to ensure that productive work gets completed and where conflicts of opinion arise, they can get timely treated and resolved in the best interest of the client.

Accountability: Ambiguity and Interdependence

When a number of professionals from different disciplines are assessing the issues at stake in order to provide an intervention or strategy as part of a package, often the context and historical information may not be in line with current thinking and practice. This can easily lead to conflicts of interpretation of the issue and as a result conflicts on the appropriate approach and solution. With this rising ambiguity professionals can either feel devalued or take a more rigid stance where only one solution is embraced: usually their own. This can often lead to feelings of resentment and frustration which are very easily transferred to staff and teams, family members, other carers – and ultimately the client – who may be in need of receiving supportive training in a specific intervention. Ultimately, this sense of frustration and disempowerment leads to a level of ambiguity and eventually to ineffective interventions. And with ambiguity and ineffective interventions comes the lack of self-belief that an intervention is going to be effective in the first place even before it has been fully implemented. On the other hand, situations have risen, where ambiguity is a product of interdependence between different professionals and their disciplines, where lack of clarity of roles – who will be the person taking the lead in a large group of people – and where assumptions of specific roles taken can become fuzzy. These systemic challenges can all lead to conflicts and potentially to fatal flaws or – in best instances – to very ineffective and costly interventions. There are potentially a number of key factors that can affect the effectiveness of multidisciplinary teams work; sometimes the sheer number of risks factors can compound to the failure of interventions and at times to the breakdown or the premature suspension of support provided as a result of their ineffectiveness.

The MDTs intervention has not been adopted for long enough time to be able with evidence and certainty to conclude that it has been unsuccessful. At times it is just the sheer number of 'changes' and 'transitional points' which contribute to a fragmented and vulnerable MDT, at other times corrective actions become the focus of the multidisciplinary team work which takes away energy, focus and indeed productivity from the actual original goal and aim: the needs of the client. A useful way of addressing and better understanding the dynamics of MDTs work according to the analysis presented is to reflect on factors which actually have contributed to its success. Key elements have

been selected, for the purpose of this discussion and these are as follow: a) role of multidisciplinary teams – clarity; b) collaboration and co-operation c) identified qualities: homogeneity vs. heterogeneity and d) tolerance and constructive feedback – constructive criticism.

Figure 1 aims to highlight some emerging key elements which have been identified for desired outcomes. They will be discussed in the last section.
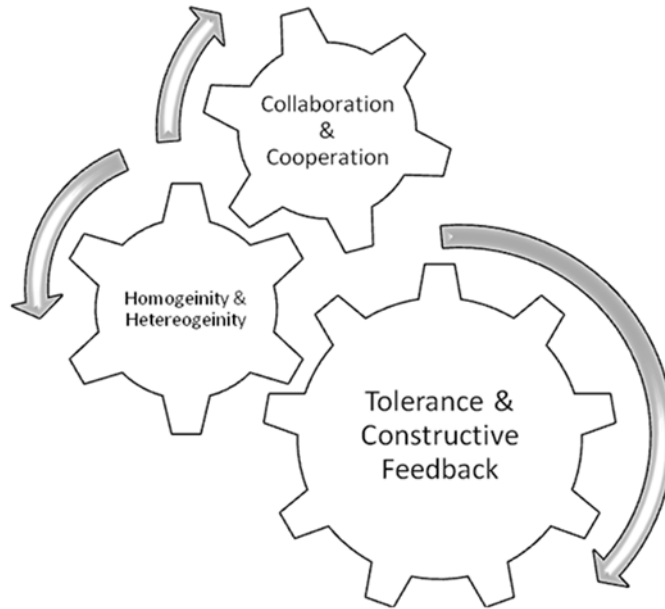

Figure 1
Multidisciplinary team-working framework of positive practice.

Discussion - Multidisciplinary Teams: Clarity of Roles

Given the above reflections so far presented and the potential identified barriers and risks factors, a summary of key elements resulting from the author's perspective, which can potentially contribute to successful multidisciplinary team work, will now be discussed. As Nolan (1995) put it: (Inter) (multi) disciplinary care, although not denying the importance of specific skills, seeks to blur professional boundaries and requires trust, tolerance, and a willingness to share responsibility (p. 306). Similarly the author's reflections presented in this article suggest that multidisciplinary teams work requires a level of established trust in each other competencies, a level of tolerance in embracing one other's perspectives and more importantly a willingness to share roles and responsibilities after a clear, well-defined and agreed shared aim/goal. Perhaps the initial question to be asked when multidisciplinary teams are formed together is indeed '*what is the role of this multidisciplinary team and its aim/s*?' '*Who is putting together this multidisciplinary team*?' Once these initial questions are actually addressed and a common answer agreed, it is suggested that it is about exploring flexibility within the well-defined structure of the team which can promote change, collaboration and co-operation.

Collaboration and Co-Operation: What Does It all Mean?

A definition of co-operation from the Oxford Dictionary states that it is '*the action or process of working together to the same end'* (Oxford Dictionary, 2015). True collaboration and co-operation requires therefore shared aims, shared value systems and honest, respectful and purposeful communication: all themes which have emerged from the author's analysis of data.

In order to address barriers of alliances and triangulation previously discussed, opportunities for negotiation and clarification need to be purposefully fostered through trustful partnership. In order to realise shared goals, a sound collective commitment is required and before this, a clear understanding of what type of information is shared, with who and in what time frame. Self-reflections have also highlighted that these stages can be often overridden by an overreliance on the desire to 'get to the end' especially when resources are constrained and people experience uncertainties in their roles/jobs. This means that often the actual process is overshadowed by the emergency of an immediate plan. This immediacy can often risk of being ineffective.

Identified Qualities: Homogeneity and Heterogeneity

In order to achieve a level of solidity within a multidisciplinary team which is necessary in order to avoid fragmentation and potential unhealthy alliances, homogeneity has emerged from the author's reflections as an important key element for success. However, this homogeneity needs to be balanced with a level of heterogeneity which can add a level of healthy tension where a level of threat can encourage cohesion in a group. Reaching this balance between homogeneity and heterogeneity within a MDT requires skilful interpretations of potentially sensitive situations and the ability to adjust accordingly to its different manifestations. In the discussion paper from the Mental Health Commission (2006) it is suggested that in order to nurture key competencies towards MDT, some consideration needs to be addressed at a training level, through both professional courses at undergraduate and post-graduate levels. This process will partly address some of the competencies necessary for effective MDT work. And in the absence of this initial training, opportunities for developing these competencies need to be offered at the start of any MDT work.

Conclusions - Maintaining the Health of a Multidisciplinary Team

In order to better understand multidisciplinary team work, this paper presented some reflections from the author's perspective, on the risks and barriers encountered through this model of working which has been driven in the last 10 years within health, care, education and sport. It tried to better define emerging risk factors stemming from the author's own working experiences. Themes were identified throughout the analysis and these were presented and discussed. What the analysis suggested is that risk factors can often lead to ineffective and costly interventions. Furthermore, as a result of these reflections, the paper aimed to identify and highlight key elements for successful

multidisciplinary team work and to present critical key success factors. It is suggested that these critical key factors need to be positive drivers through a continuous process of integration, collaboration and co-operation. In summary these key success factors can be defined as follow:

- The importance of setting right at the start of any MDT work clarity in roles. As highlighted in a discussion paper from the Mental Health Commission (2006) this will identify clearly what professionals need to have and what they need to achieve within the workplace.
- The importance of nurturing MDT work through setting out clear values, attitudes and teams' knowledge.
- The importance of establishing right at the onset of multidisciplinary team work a shared and committed aim where everyone, though rising from different disciplines, competencies and capabilities are all truly in agreement and committed to adhere to and work towards.
- The importance of establishing a level of trust and tolerance in the pursuit of true collaboration and co-operation. This will undeniably include misunderstanding, a level of conflict and personal and professional differences which need to be seen as generating creative thinking, partnership and ultimately effective solutions.
- The importance of accepting change within a homogeneous team who still works towards a common and agreed goal.
- The importance of acknowledging differences in communication styles which (regardless) need to be open, transparent, respectful and effective.
- The importance in addressing concerns and ambiguities through collaborative opportunities to discuss and openly and constructively seek and provide immediate but also long-term corrective treatments.
- The importance of recognising (and tolerating) that an individual perspective can at times be overridden there where an individual opinion might not at the time be the most effective and might not reflect a more general commitment to treat the identified risk.
- Acknowledging and accepting feedback constructively will remain a key success factor in the maintenance of a healthy multidisciplinary team work.
- The importance to recognise a component of MDT which highlights reflective practice in action and a commitment to working with new and changing models of education, health and care for life-long learning.

Having highlighted these emerging key success factors stemming from the author's perspective, it is hoped that further and more frequent practitioners' reflections can be shared in the future on the topic of multidisciplinary team work. The aimed benefits of hopefully improving our local and national services, where the skilful knowledge from different disciplines and perspectives are truly integrated together will continue to provide more enriched, efficient and effective care, education and health to a range of clients, their families and organisations as a whole.

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About the Author

Irina Roncaglia PhD C.Psychol works for the National Autistic Society (Sybil Elgar School) as a Chartered Practitioner Psychologist. Her research interests include Transitions, Lifespan Models, Coping Processes & Strategies and P