The Promise of the Open Science Movement for Research on Identity

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Abstract

The study of identity development has changed a great deal in the last couple of decades. The purpose of this essay is to reflect on these changes, what they mean for the study of identity, and what they mean for the field moving forward. On the one hand, research on identity has greatly increased in depth, breadth, and rigour. On the other hand, however, current research practices in the field serve as a serious barrier to generating cumulative knowledge. The solution proposed for dealing with these challenges is to embrace the open science movement, which consists of a set of principles and behaviors that promote transparent, credible, reproducible, and accessible science. The four principles of transparency, credibility, reproducibility, and accessibility serve as a guide for understanding specific behaviors to implement, and thus improve research in the field. Supplemental material available at <https://osf.io/mszjt>.

Keywords: identity development, open science, research methods, reproducibility

What is the current state of research on identity? What do we know, how have we progressed, and what is the quality of our accumulated research? The purpose of this essay is to reflect on these questions, what they mean for the study of identity, and what they mean for the field moving forward. In doing so, I take the perspective of a participant observer, and as such what I share here is necessarily my subjective assessment of the past and future promise of identity research. Readers may not agree with all of the specific claims and arguments advanced, but I hope that will not deter from the over-arching message: we have been doing pretty well in enhancing the rigour of our research, but we can do better. *We must do better.*

My central argument is twofold: on the one hand, research on identity has greatly increased in depth, breadth, and rigour. On the other hand, however, our current research practices serve as a serious barrier to generating cumulative knowledge. I put these two claims side-by-side to juxtapose how advances in the field can obscure problems and even lead to new ones. The solution that I propose for dealing with these challenges is to embrace the open science movement, which seeks to enhance the quality of research across the sciences (Spellman et al., 2018).

This essay is divided into four sections. First, I describe the ways in which identity research has improved in recent years. Second, I outline some of the major threats to this research—and all research—that has increasingly been recognized. Third, I discuss how the Open Science Movement can help positively address these threats. Finally, I close with suggestions about how to proceed with our research moving forward. Importantly, when discussing identity research I primarily draw upon work conducted from a developmental perspective, which is my own primary focus. That said, whereas most of my examples and content come from a developmental perspective, the solutions flowing from the open science movement are broadly applicable to the study of identity (or anything else, really).

Identity Research Has Changed—For the Better

I started my Ph.D. program in 2004, over 15 years ago, so I thought I would reflect on what things were like then versus now. Of course, this is a meaningful time frame for me in terms of my own personal development, but it turns out that it is actually a meaningful time frame in which we can examine changes in the study of identity. Many of the major changes in the field occurred during the mid 2000s, just as I was finding my own way in the field. I was, thus, “birthed into the crisis,” which undoubtedly shaped my thinking substantially. Below I highlight six changes that I found to be especially important. I do not offer these six as a complete set or even an accurate set; many readers may disagree that these are important changes at all. Nevertheless, these six help to illustrate some of the ways in which identity research has changed, and cover a range of conceptual and methodological advances.

1. *Return to Erikson’s original writing:* The identity status model was introduced in the 1960s (Marcia, 1966), and from its inception through the 2000s it was the dominant model of identity development (Meeus, 2011; Schwartz, 2001; Waterman, 1999). To be sure, the status model is still prevalent in identity research, but it had previously been so dominant

that it was almost entirely equated with Erikson's own views on identity (see Côté & Levine, 1988; Syed & Fish, 2018; van Hoof, 1999; Waterman, 1999). In the mid 2000s, scholars ceased to take Marcia as a starting point, returning to the original writings of Erikson to inspire new work in identity. It turns out that there was incredible richness in Erikson's theorizing that was not evident in the identity status model. A notable example of this work was Elli Schachter's (2004) article on identity configurations, but there were others who were similarly using Erikson, and not Marcia, as the starting point from which to further develop ideas about identity (e.g., Hammack, 2006; McAdams, 2001; see Syed, 2012).

2. *Emergence of Narrative Identity:* Dan McAdams articulated his approach to life stories in the late 1980s, and continued to develop the ideas throughout the 90s and 00s (McAdams, 1988; 1993, 2001, 2013). And yet initially his work was largely situated within personality psychology, and was mostly disconnected from identity development research conducted at the time. There were a few efforts to connect identity statuses and narratives (e.g., Josselson, 1982), but this work never caught steam to establish a coherent body of research. This all changed in the 00s, thanks in large part to Kate McLean's efforts to better connect narrative identity to the developmental study of identity (McLean, 2005; McLean & Thorne, 2003; McLean & Pratt, 2006). Connecting the identity status and narrative approaches was also a focus on my early work on ethnic identity (Syed & Azmitia, 2008, 2010; Syed, 2012). Interestingly, despite the fact that Kate McLean and I are now close collaborators, we were not at that time, and we were unaware of each other's efforts to link these two models. Thus, there was something of a zeitgeist around these issues that led us to independently pursue this integration. Moreover, unlike the previous efforts of integration, these took hold, and now narrative identity is a robust, well-established approach within the developmental literature. It is important to note that this greater acceptance and use of the narratives identity model is part of a much larger trend towards greater integration of qualitative and mixed methods work in the study of identity (Syed, 2015). What differentiates narrative identity is that it is a complete theoretical account of identity, not only a method for studying it.
3. *Introduction of the Dual-Process Model:* One of the reasons that there were so many new developments in identity research during the 2000s is that the identity status model had become a bit stagnant. This is not meant as an insult of the model, rather, it had been used and relatively unchanged for 40 years. At some point researchers are going to want more—they should want more. Additionally, although the identity status model was highly generative, it was clear that that it was an over-simplification of the identity development process. Accordingly, there were groups of identity researchers who embraced the gist of the status model but sought to bring in more of the dynamic complexities involved in the identity development process. This approach, which came to be known as the dual process model, was actually being advanced by two research groups who developed slightly different measures and slightly different processes, but were nonetheless working on the same general problem (Crocetti, Rubini, & Meeus, 2008; Luyckx, Goossens, & Soenens, 2006). Their collective work ushered in a new era of theory and methodology. With regard to the latter, there was an associated explosion in the use of questionnaire-based methods,

rather than the resource-intensive Identity status interview. These new instruments allowed for much larger samples and longitudinal designs, and thus there were great advances in our knowledge of identity development in a very short period (see Meeus, 2011 for a review). Importantly, this work was conducted almost entirely in Europe. Although identity research has always been international, the substantial work on the dual process model greatly advanced the international nature of the field.

4. *Model-based Classification Methods:* Initially, the identity status interview was used to assign individuals to the four identity statuses (achieved, foreclosed, moratorium, and diffused). The introduction of questionnaires to assess identity exploration and commitment led to the use of median splits to determine status classifications (e.g., Balistreri, et al., 1995). Median splits are notorious for their many limitations, statistically and conceptually, but no one seemed to have a better idea until model-based approaches to classifying individuals (e.g., cluster analysis, latent profile analysis) became more widely known and accessible. I vividly recall in 2005 thinking that I was clever and innovative by using cluster analysis to derive identity statuses in a study of ethnic identity. Just as I was about to submit my paper in 2006, a special issue of *Child Development* came out with TWO papers that did just that (Seaton, Scottham, & Sellers, 2006; Yip, Seaton, & Sellers, 2006). Moreover, it turns out that cluster analysis had already been used to derive identity statuses (Luyckx, et al., 2005), which I was not aware of until some years later. My own paper was not published until much later (Syed, Azmitia, & Phinney, 2007) and at that point was not so novel. But these things happen, and we must press on. Now model-based methods are the de facto approach in the literature, for better or for worse (more on that below).
5. *Greater Attention to Marginalized Identity Domains:* Multiple identity domains have always been studied, but there was seldom much direct interest in the domains themselves. Rather, the intent was to sample across a variety of domains to derive a better overall assessment of identity development. That all changed with Jean Phinney's (1990, 1992) work that ushered in ethnic identity as a domain within the developmental model (see Syed & Fish, 2018, for the history). Of course, scholars such as Bill Cross (1978) and Amado Padilla (1980), among others, had been studying ethnic and racial identity for decades, but that work was largely distinct from the developmental, identity status literature. Following Phinney's work, research on ethnic identity from a developmental perspective really took off. Zooming in on the ethnicity domain showed the value of intense domain-specific studies, and opened the door for inquiry into other marginalized identities. Moreover, research on ethnic identity has been on the cutting edge of modeling identity development in new ways: growth modeling (Pahl & Way, 2006), experience sampling (Yip & Fuligni, 2002), social network analyses (Kornienko, Santos, & Updegraff, 2015), and many others. These developments have been heavily driven by ethnic identity researchers, and we need to be sure we recognize their contributions to the broader field of identity.
6. *The Value of Studying Identity Content:* Finally, and this is admittedly one of my own personal crusades, there has been a large increase in recognition of the value in studying

identity content. The identity developmental literature, rooted in the identity status model, had long emphasized the process of identity, how individuals came to develop their identities, with relatively little focus on the content of their identities, or what those identities actually consisted of and “looked like.” When I started trying to understand ethnic identity through individuals’ narratives I quickly saw not only the value of studying content, but the necessity of doing so to properly understand the process (Syed & Azmitia, 2008). Since then identity content has been studied by many researchers in a variety of ways, and there had been sufficient progress to necessitate an integrated framework to better define and study identity content (Galliher, McLean, & Syed, 2017). The increase in studying identity content illustrates how some of these advances are interconnected, as content is often studied from a narrative, or more generally qualitative, approach.

Again, this is just a selection of advances that I think are particularly important, and I welcome readers to reflect on what their own list might constitute (e.g., greater emphasis on “process” using more varied methods, see Kunnen & Metz, 2015; stronger focus on cultural contexts, see Galliher et al., 2017). Nevertheless, there has clearly been a great deal of change in the field, and those changes have almost universally been for the better. Two recent keynote addresses--the International Society for Research on Identity 2017 Presidential Address by Marilyn Montgomery and a 2017 talk at the Society for the Study of Emerging Adulthood identity pre-conference by Hal Grotevant--both argued the same point (independently, as far as I know) that identity research has entered a period of “crisis” following a period of “normal science” in the Kuhnian (1962) sense. They argued that we are questioning and revisiting our previous theories, methods, and models, and are now beginning to chart a path towards a “new normal science,” one that is ideally improved over the previous (Figure 1). As identity researchers I imagine we can all appreciate this process. Our science has improved, our knowledge of identity has improved. We are on the right path.

Figure 1. Thomas Kuhn's route to normal science. Source: <https://www.legalise.org.nz/natural-medicine-safer-western/>

If Everything is Progressing Nicely, then Why Am I so Troubled?

With all of these great developments in the field, why am I nagged by the feeling that we know much less than we think we do? Why do I feel that, despite our excellent advances, in

some ways we are spinning our wheels, that we are not producing a sufficiently cumulative knowledge base?

Like most fields in the social sciences, identity researchers have valued innovation. New ideas, new methods, new data. Indeed, this is really the spirit in which the advances that I highlighted previously came to be. And to be clear, I am not arguing against innovation. But we cannot value innovation at the expense of rigour, and our rigour is lacking.

How can I say this? How do I know this? You might be sitting there reading this, thinking, “surely this does not apply to me, I conduct rigorous work.” No, you don’t. None of us do. *This is now known*. Numerous issues with our modal research practices have now been raised. These issues have been so widely demonstrated across many different fields of science that it is now entirely unacceptable to say that the issues do not apply to you and your area of research. They do.

I assume—hope, actually—that you dear readers have heard something about the “replication crisis” in science—not just in psychology, but in science as a whole (Fidler & Wilcox, 2018). Although you have heard about the replication crisis, the degree to which you have engaged with the issues associated with it has surely varied, as does the degree to which you think the replication crisis is relevant to your work. Importantly, referring to the current concerns in science as the “replication crisis” is an incomplete frame of the relevant issues (Syed, 2019). Replication is important and should be attended to, but does not encompass the full spectrum of issues. Focusing only on replication makes it too easy to dismiss, too easy to say that “my work replicates just fine, thank you.” Even if that is true, which I honestly doubt, it does not follow that the way you do science is just fine and not in need of change.

The concerns with how we go about our science are multiple, complex, and intertwined, and it is beyond my current task to explain them all in detail. But, again, the concerns go far beyond replication to include publication bias, p-hacking/questionable research practices/researcher degrees of freedom, low statistical power, HARKing (hypothesizing after results are known, Kerr, 1998), mistakes/sloppiness, jingle jangle fallacies, and even outright fraud. If you are not familiar with any of these issues, then you should get up to speed post haste. All of these issues can of course impact the replicability of our findings, but they are not directly about replication per se, they are about rigorous research practices.

Moreover, couching the issues narrowly in terms of replication misses the larger issues that we are facing in terms of theoretical sophistication and high-quality measurement. One could just as easily argue that we are in the midst of a “theory crisis” (Muthukrishna & Henrich, 2019) or a “measurement crisis” (Flake & Fried, 2019) or a “construct validation crisis” (Schimmack, 2019). And indeed, they are not wrong, unless they are arguing that one of these “crises” is more important than any other (see, e.g., Szollosi et al., 2019). All of these issues require attention.

Additionally, it is important to note that many of these issues have been discussed in the identity literature for many years. There have been back and forths about whether or not the identity status model is a theory since at least 1982 (Côté & Levine, 1988; van Hoof, 1999; Waterman, 1982). Measurement has been a point of discussion throughout the history of the field, but especially through the 80s and 90s, with the development of new questionnaire-based methods (Balistreri, et al., 1995; Bennion & Adams, 1986; Phinney, 1992), and then again in the 00s, with supposedly improved questionnaire-based methods (Crocetti & Meeus, 2015; Kunnen & Metz, 2015; Ong, Fuller-Rowell, & Phinney, 2010). So the idea that there are core issues that need to be resolved has lurked for decades, and everyone knows about these issues, and yet in my view we have not made much progress. One reason for that is the lack of a meta-scientific framework that guides our work. Now, however, I believe we have that framework.

The Open Science Movement Can Improve Identity Research

I previously attempted to locate a formal definition of open science, to no avail (Syed, 2019). Thus, synthesizing existing partial definitions with my own beliefs and perspective I generated the following: *Open Science consists of a set of principles and behaviors that promote transparent, credible, reproducible, and accessible science.* The four principles of transparency, credibility, reproducibility, and accessibility serve as a guide for understanding specific behaviors to implement. Thus, open science involves specific behaviors that follow from general principles. I find this structure advantageous because the principles are universally applicable across science. There is no area of research to which they do not apply. How those principles are manifest in behaviors, however, will indeed vary by disciplines, sub-discipline, methodological approach, and so on. But they all derive from the same principles. To be clear, my definition is not an agreed upon definition in the field, and some argue that no definition will be functional given the wide variety of practices captured by the term “open science” (Yarkoni, 2019).

I will discuss each of the four principles and their relevance for identity research, but will focus primarily on transparency and credibility.

Transparency *pertains to researchers being honest about theoretical, methodological, and analytic decisions made throughout the research cycle.* It is important, yet still uncommon, to divulge all steps of the research process: what was measured, what was excluded, what was analyzed, etc., rather than only reporting what “worked” (typically defined as $p < .05$). I am positive that some identity researchers have dropped variables from their analyses because of the observed pattern of results. I am positive about this because I am familiar with how studies are typically conducted in the field and it is well documented that questionable research practices are widespread (John et al., 2012).

Take the scenario detailed in Figure 2. Panel A shows the results of a study as reported in a (fictitious) article, wherein *identification with commitment* and *exploration in depth* positively predict *life satisfaction*. This appears to be a plausible set of findings, but is also very unlikely to represent the full set of identity constructs measured in the study. I know this

because identification with commitment and exploration in depth are part of the dual-cycle model and are commonly measured using the Dimensions of Identity Development Scale (DIDS; Luyckx, et al., 2008). It would be strange, although not unheard of, to only collect data for two subscales of the DIDS vs. the full scale that contains five subscales. That means an analysis resembling Panel B was very likely conducted but discarded because three of the dimensions were not associated with life satisfaction. Panel A and Panel B afford very different interpretations of how identity is associated with life satisfaction, with the selectively-reported Panel A suggesting stronger evidence than is warranted. To be clear, this is a problem of all identity research, not just work using the dual-cycle model.

Figure 3. Three different reporting options with the same data.

If only that were the end of the story. Likely even more common is “outcome switching.” Brent Roberts (2011) coined the term “outcome fragmentation grenades.” We

often collect multiple outcome measures: self-esteem, satisfaction with life, anxiety, depressive symptoms, GPA, etc. and then toss it like a grenade and see what we hit, i.e., what our constructs of interest can “predict.” This can be seen in Figure 3, Panel C, which shows that not only were there five predictors, but also five outcomes. This means that there were 25 tested associations between identity and outcomes, with one statistically significant at $p < .05$ and one “marginally significant” at $p = .07$. Finding 2 significant association of 25 is about what we would expect by chance if there was no association ($2/25 = .08$). Presenting Panel A results when you test Panel C models severely distorts the publication record and is a major threat to cumulative knowledge.

Importantly, with this example there is a larger looming issue that we rely on weak theories and therefore weak hypotheses that do not actually provide any guidance for what identity constructs should be associated with specific outcomes (see Syed, 2017; see also LeBel & Peters, 2011 about this problem in general). Thus, we try everything and see what sticks. This is a good illustration of how theories, methods, and replications all come together.

The principle of transparency addresses this problem. If you tested Panel C, report Panel C, regardless of the outcomes. There are many ways to enhance transparency in your work, but one clear and practical solution is to preregister your work. Preregistration means that the researcher specifies in advance what they plan to do in the study—the research questions, hypotheses, design, measurement, and analyses (Nosek et al., 2018). Preregistration can be done for both new studies and for secondary analysis (Weston et al., 2019). It can be used for qualitative studies and meta-analyses (Haven & van Grootel, 2019; Quintana, 2018). Preregistration can be used for any type of study, any design, any analysis, but of course the way it is implemented will look different in different research contexts.

There are many misconceptions about preregistration, and this is not the time for me to get into all the nuances, but one of the biggest (mistaken) objections is that preregistering stifles discovery. This is 100% false. Preregistration does not prohibit you from conducting exploratory analyses; you can and should do so! All it does is distinguish between confirmatory, pre-planned analyses, and exploratory, data-dependent analyses. Additionally, it does not allow you to conduct exploratory research and then present it as though it was confirmatory (e.g., HARKing; Kerr, 1998; see also Bones, 2012). I have not come across a single compelling argument to not preregister; all arguments against it fundamentally misunderstand preregistration or conceive of it in a narrow way. Thus, if you are skeptical, I challenge you to actually learn about preregistration and become more informed.

Preregistration has not really taken hold in identity studies, but it needs to. Of course, doing so requires a shift in norms, as editors and reviewers often press for “clean” results and do not often like to see a lot of non-significant findings. We need to shift these norms together, authors, editors, reviewers, and funders, to improve our science.

Credibility is the degree of trustworthiness and believability of the research reported in the literature. Credibility is closely related to transparency: it pertains to how others will view

your work and the work of a field in general. Transparency is a necessary but not sufficient condition for credibility. That is, to maximize credibility research needs to be fully transparent. Just because it is transparent, though, does not mean it is credible.

I noted earlier how the use of person-centered, clustering methods in identity status research were a major advance over previous methods of classification. I indeed believe this, but these methods also come with serious limitations. Most pertinent to the current discussion is that they are data-dependent models. That is, the nature of the groups that can possibly be observed is dependent on the empirical distribution in the particular sample, and the final classification of groups is dependent on idiosyncrasies of the data in the sample rather than some theoretically-determined criteria. This is well known by most researchers, and so they engage in robustness tests or some kind of sensitivity analysis to ensure the model is reliable in the sample. This is a good thing.

But what about consistencies across samples? What if we switch our thinking to a meta-scientific perspective, where we become concerned about cumulative evidence, theoretical coherence, and the like? From that perspective things look a bit more grim. In one of her dissertation studies, Johanna Carlsson (2015) conducted an analysis of all of the published papers that used clustering methods to derive identity statuses based on the Dimensions of Identity Development Scale (DIDS). Whereas within a study what constitutes high, low, or moderate levels of identity processes is determined relative to the rest of the sample, a high level in one sample could be a moderate level in another sample—it all depends on the distribution in the sample. Her analysis showed quite clearly that the statuses are not defined consistently across samples. The achievement status tends to be rather consistent across studies, but foreclose, moratorium, and diffusion show quite a bit of variability across studies (See Figure 3 for an illustration of moratorium). To be clear, I am not intending to single out those who use the DIDS measure or those who use clustering methods to study identity statuses. I have done so myself. This analysis illustrates a broader point that applies to all of this. If we specify, in advance, what are criteria are, then we will produce stronger individual studies and, perhaps more importantly, a more reliable cumulative record.

Figure 4. Levels of indicator variables for the Moratorium cluster across 15 studies, showing the wide variability in levels of both commitment variables across studies.

Again, preregistration is a behavior that can increase credibility by specifying the criteria for determining the number of clusters, how clusters will be determined, and so on *before* you see any of the results. The decisions are independent of the data. A shift to publishing Registered Reports would increase credibility even further (Chambers, 2019). Rather than submitting a traditional manuscript that includes Introduction, Methods, Results, and Discussion sections, Registered Reports involve submitting the Introduction, Methods and Planned Analysis sections only, *before* you do the study at all. *That is what is reviewed.* The idea is that the traditional publishing model is strongly biased towards “findings.” Results that are not statistically significant or that run against prevailing views are less likely to be published. We know this is the case because the percentage of statistically significant results in the literature is well above what it should be if all results had an equal chance of being published, especially considering how underpowered most studies are (Button et al., 2013). Rather than making decision based on the results, with Registered Reports the decision to publish is based on sound conceptualization, methods, and analysis. The outcome of initial peer review is an in-principle acceptance, meaning that researchers can go and do the study, and as long as they did what they said they would and do so competently, then the study will be accepted for publication. *Regardless of the results.* Early analyses of Registered Reports have shown that about 50% of hypotheses are supported, vs 95% in the traditional literature (Scheel et al., 2020), and thus they are offering a more accurate understanding of the strength of evidence for our hypotheses. Registered Reports go a long way to enhancing the credibility of individual studies and have the potential to enhance the credibility of entire fields.

Reproducibility *pertains to how well we keep records of what we do, at all phases of the research cycle, so that everything can be reproduced when needed.* I will not say much about reproducibility here, but it really requires revisions to how we approach the research process at

all levels. Few of us have actually spent any time giving our workflow much thought, let alone standardizing it. In what order do you complete tasks? How do you keep records of that work? Do you document all data cleaning and analyses using scripts? How do you ensure that you will understand what you did 6 months, one year, or five years down the road? If the answer to all of these questions is an uncomfortable silence while staring at your socks, then maybe you have some work to do. The good news is that we all do; we are in this together. Start now (see Kathawalla et al., 2020, for ideas on how to get started).

Accessibility *pertains to making all aspects of the research cycle open and available for those who are interested.* There are many different research products that we can make available. First is our research results. We all know that publisher paywalls prohibit access to articles, particularly for those who do not have institutional privileges that provide access. Many researchers post their articles to Researchgate.com or Academia.edu. That is good, but those are proprietary sites that send frequent emails and promote a “leaderboard” approach to science (e.g., by advertising the “most cited” person in your department). In contrast, PsyArXiv.com is an open accessible repository developed by the Center for Open Science and the Society for the Improvement of Psychological Science, two of the largest and most important non-profit scholarly organizations associated with the Open Science Movement in psychology. Posted articles are freely available and discoverable by Google Scholar. I encourage you to give it a try; it is easy to use and makes your work widely accessible (see Syed, 2020, for practical considerations). It is especially useful for uploading book chapters, which are notoriously under-read. The vast majority of journals allow the posting of author-formatted versions of accepted articles (i.e., the final Word doc version), but not the publisher-formatted final version. Authors can easily check on what is permitted for each journal at <http://sherpa.ac.uk/romeo/>. Upload it to PsyArXiv and let the public enjoy.

Another strong candidate for accessibility is our measures and protocols. We need to help each other, support each other, and make it easier for each other to conduct cumulative research. Measures and protocols are very easy to upload to public repositories such as OSF. For example, for a recent study on master narratives about gender this page, <https://osf.io/q2bh4/> includes all narrative prompts, coding manuals, coded examples for the different categories, and other supplemental materials that would not fit in the paper. A link to this project page in the published paper takes the interested reader to all of this freely and easily accessible material.

That is All Well and Good, but Where to from Here?

The preceding discussion does not cover all aspects of open science. Indeed, there are a number of important topics that I did not discuss here (e.g., open peer review, transparent and reproducible writing), and I encourage readers to learn more about all of the issues involved. Importantly, open science can sometimes be misleadingly cast only in terms of the challenges (Gaither, 2019; SRCD, 2019). To be sure, there are many challenges. But there are also a host of opportunities. I have highlighted some of these above, but I want to draw special attention to one more: we need to be willing to share our data. There are a variety of reasons for sharing

data; probably the reasons that are discussed most are to either a) verify claims made in published work or b) conduct alternative plausible analyses.

But another important reason for sharing data is that we all have limited resources. Yes, this varies considerably among us due to country, institution, and ability to secure grants, but the bottom line is that it is not easy to get large sums of money to fund research on identity issues. This is especially true for those studying marginalized identities or using unconventional methods. Limited resources clearly make it difficult to access the samples we need, both in terms of specific populations of interest and in terms of large enough sample sizes to do the kinds of analyses we really want to do. Thus, we need to share the data we collect, be generous and willing to collaborate, all in the name of conducting good science, so that we can better understand identity and all its complexities.

Recently, a group of narrative identity researchers, including myself, was rankled by the inconsistencies in the literature. Not surprisingly, each lab tended to code for the narrative process variables that they were most interested in. One lab would code for meaning making, another personal growth, another agency and communion, another coherence, and so on. We recognized the challenge this posed to developing cumulative knowledge, and thus devised a plan: 1) identify a few existing data sets that had certain features, 2) identify a large set of narrative processing variables that we felt were important and/or well-represented in the literature ($k = 16$), and 3) code all of the narratives for all of those process variables.

The final sample was 855 participants and 2,565 narratives (McLean et al., 2019; project page: <https://osf.io/sb9f5/>). There are several questions to ask of these data, but one critical one was whether there were reliable dimensions that underlie the set of processes. Through a series of factor analytic models we found consistent evidence for a three factor model: autobiographical reasoning, structural themes, and motivational/affective themes. I will not say much about the findings here—you can read the paper if you are interested—but the point is we were really only able to do this project because we pooled resources, were generous with our data, and collaborated. It is unlikely that any one lab would have pulled off this project, especially considering the diversity of the data that were included.

So where else might these opportunities be in the identity field? I think few would argue that questionnaire methods of assessing identity statuses are superior to using the identity status interview. The reason they were developed and became prevalent is that the interview is resource-intensive, and using it is unlikely to lead to sample sizes that are optimal for the kinds of analyses we want to do. And, indeed, the sample sizes of status interview studies tend to be small (e.g., $N = 86$ in Marcia, 1966; $N = 100$ in Kroger & Green, 1996; $N = 197$ in Fadjukoff et al., 2005 is the largest I have seen). But what if we pooled them all together, and conducted a secondary data analysis of these interviews? What if they were available in a repository for authors to draw from? I am sure most of readers are immediately thinking about ethical concerns and consent for such a thing. That is surely warranted, and is a barrier to sharing some data (but really only open sharing, not personal sharing; see Meyer, 2017). But there are alternatives.

Collaborative efforts such as Many Labs (Klein et al., 2018), Many Babies (Frank et al., 2018), and the Psychological Science Accelerator (Moshontz, et al., 2018) provide a different model. These are large scale collaborative projects where each lab contributes a modest amount of data that are then pooled across labs to generate large samples. What if we took on a Many Identities project? What if 10 identity researchers all committed to conducting 50 identity status interviews? We would have 500 participants, which would immediately be the largest identity status interview study ever conducted. What if we also administered questionnaire measures, such as the DIDS and UMICS? We would be able to address major issues in the field related to construct validity (see Carlsson, 2015). While we were at, we could also code these interviews for narrative identity constructs to link up different strands of identity research. The Gothenburg Research Unit on Youth Development (GReY) led by Ann Frisén has been doing this kind of innovative work with the identity status interview for some time (e.g., Frisén & Wängqvist, 2011). If we did this as part of a large scale collaborative effort we would be able to address often discussed issues of how the status model and narrative model intersect, both using interview and questionnaire methods of statuses. I would venture to say that this would be one of the strongest cross-sectional studies of identity development ever conducted. And it would really not be that difficult to pull off.

Maybe that is not a good idea, but that is not really the point. The point is that we need to shift our thinking towards how to foster a more cumulative science. Open science provides a meta-scientific framework for how to approach that. Open science gets us thinking about how to be transparent, how to promote the credibility of our findings, how to ensure that our work is reproducible, and how to make our work widely accessible. Most importantly, it *makes us think*. We should be slowing down, thinking through our research process, and thinking about the implications of our choices. Doing so will move us towards a more cumulative knowledge base.

Conclusions

Identity researchers have the shared experience of doing the work we do because we are captivated by this concept of identity, a concept that is so fundamental to the human experience. We want to do justice to the experiences of our participants, to truly and accurately understand them. This attitude lends itself to open science principles. We should readily accept them as a field, and actively work to ensure our research flourishes. All of these new changes can seem overwhelming, and they are. The good news is that you do not have to do all of it at once. I certainly did not and do not (see Kathawalla et al., 2020 on how to “ease in” to open science). Moving towards a more open science framework for your scholarship takes time and effort, but it is well worth it. Pick something to do right now. Post a preprint on PsyArXiv. Make an OSF page for a recent or in-progress paper and upload the materials. Once you get started you will get a better idea of what makes sense for you and your workflow. In many ways, moving towards open science requires a reconceptualization of your academic identities. We should all be able to appreciate that.

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