QUALITATIVE RESEARCH IN PHARMACY EDUCATION

Applying Visual Research Methods in Pharmacy Education

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Submitted April 23, 2018; accepted October 31, 2019; published January 2020.

Objective. To explore the use of a qualitative visual research method, analysis of *Lifenets*, to understand students' conceptions of their social and material worlds.

Methods. The Lifenet View model and drawing exercise invites students to create a cognitive map of the self in social and material contexts. Ninety-five undergraduate students enrolled in an online undergraduate human development course created Lifenet drawings depicting their connections to people, places, and things at two points in time: the present and the distant future. They also wrote essays describing their drawings. Researchers used an inductive analytical process to identify patterns in the set of drawings, developing a coding taxonomy used to systematically analyze the data.

Results. Results offered insights into participants' current self-perceptions and their expectations for the future. Analysis of Lifenets allowed researchers to document and gain insight into participants' perspectives on their current relationships, career aspirations, and assumptions about aging. While students often depicted strong ties to family, friends, and religious entities, few students expressed ties to the secular institutions that define civic and professional life.

Conclusion. The Lifenet View exercise may provide instructors with a way to better understand students' social circumstances and to identify and address specific gaps in the professional education curriculum. Use of the Lifenet View exercise in the pharmacy curriculum could provide valuable opportunities for career exploration and expanded cultural awareness of self and others.

Keywords: visual research, student drawings, professional education, CAPE 2013, Lifenet View

INTRODUCTION

Pharmacists play a critical role in ensuring equitable access to health care within increasingly diverse institutions and communities. Within these diverse patient populations, they face the challenge of providing care to a variety of individuals representing multiple cultures and beliefs and creating an informational conversation with them in a culturally sensitive manner.¹ Qualitative research approaches offer empirical strategies for understanding the social contexts in which pharmacists live and work.²⁻⁴ They may also support student pharmacists' growth in self-understanding, a cornerstone of providing culturally competent patient care.

Qualitative research methods offer powerful tools for gaining insight into how humans perceive, experience, and respond to health care practices and practitioners. Researchers have used interviews in focus groups to better understand various aspects of health sciences education, including the learning environment and course

evaluation processes, and to investigate the nature of professional responsibility.⁵⁻⁷ They have used observational methods to go beyond analyzing what people say, to documenting what they do, ie, how they behave in hospital and community settings.^{8,9} Researchers have used drawings as a way to help people describe the impact illness has had on their lives.¹⁰ Others have used autoethnographic methods to foster and describe their own professional growth as pharmacists.¹¹

A commentary in the *Journal* noted the importance of faculty members recognizing differences and appreciating the diversity of pharmacy students in their classrooms.¹² As the pharmacy student population grows increasingly diverse, pharmacy educators confront the challenge of knowing how to best teach and mentor ethnically and culturally diverse students into becoming effective practitioners. Fostering growth in self-understanding is one aspect of this complex process. The Center for Advancement of Pharmacy Education (CAPE) Educational Outcomes 2013 include personal and professional development as part of Domain 4.¹³ Within Domain 4, self-awareness (CAPE Domain 4.1) is specifically cited as an outcome that is important to education, including the ability to reflect on personal information.

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The Academy must attend to two emerging realities. First, those who teach pharmacy may benefit from getting to know their students better. Second, future pharmacists may benefit from gaining a deeper understanding of themselves as well as the social contexts that affect patients' decision-making practices and everyday lives.¹⁴ The Lifenet View model and classroom drawing exercise were designed by the first author in 2005 to serve both these ends.¹⁵ The study described in this article employed visual research methods (content analysis of Lifenet drawings) to investigate students' social perceptions at two points in time.

Lifenets are visual representations of an individual's perceived connections to people, places, and things, and can help students describe key aspects of their lives in the present, their connections to the past, and where they see themselves in the future.¹⁶ They are cognitive maps of the self that embody some of the contexts that have shaped and continue to influence students' lives, providing insights into learners' conceptions of their own developmental processes, including aging and growing old, and conceptions of the social and material contexts seen to be salient aspects of daily life. Lifenet drawings provide an avenue for students to self-reflect and through this reflective process, to better understand themselves and others as cultural beings. Systematically analyzing Lifenets as visual data can serve multiple ends, offering a way for researchers to understand how students view the relational world while also serving pedagogical aims.

Our work with students' drawings reflects shared commitments to creating innovative and developmentally appropriate methods that bridge the gap between research and teaching. Lifespan human development examines how humans grow and develop from conception to death.^{17,18} Pharmacy students are entering a new phase in their developmental course, embarking on adult learning tasks while preparing for their future careers.¹⁹ Our research questions were "What can be learned through open-ended analysis of student Lifenets?" and "How did students depict the aging process in their Lifenets?" The project illustrates how visual data can be rigorously analyzed within a research agenda that could inform the work of pharmacy educators and other health care practitioners, while providing a class activity that is creative and promotes critical thinking.

Based on the Lifenet drawings of 95 undergraduate students, this study examined the utility and application of visual data analysis as a form of qualitative research. We discuss how this type of student-focused research and analysis might contribute to the work of pharmacy educators and pharmacy education researchers.

METHODS

Potential study participants included 103 students enrolled in five sections of an online undergraduate human development course in an urban university in the Southwestern United States in 2016. Eighty-five participants were female (83%) and 18 were male (17%), 51 Hispanic, 40 White, four multiracial, three Black or African American, two Native American, two international non-resident, and one Asian, with an average age of 25.3 years, ranging from 20 to 61 years. The course curriculum emphasized activities that highlighted the role of relationships and dynamic bio-ecological systems in development.²⁰⁻²² The Lifenet drawing task involved listening to a brief lecture on the Lifenet View (principles of human development), then drawing Lifenets representing two points in time: the present and the distant future (one's life in old age), and writing brief essays about the drawings. A description of the assignment is included in Appendix 1. The study was approved by the University of New Mexico Institutional Review Board in 2016.

The study design made it possible to include almost every student's assignment in the analysis, while quoting or sharing the content of assignments only for participants who gave us explicit consent to do so. Each participant was assigned a section/study identification number, which was used to identify current and future Lifenet drawings and essays. Of the 103 students enrolled in the course, 95 completed the assignment. We sought to study a "complete" sample of Lifenets representing the diversity of the student body. To accomplish this, we created a database of de-identified assignments. Researchers (who were also course instructors) de-identified assignments in the sections they taught and uploaded them to a shared, secure database. A research team member who was not one of the course instructors served as an honest broker in the consent process and designed the internet-based assignment repository. The Lifenets of eight students were not included in the database because they did not submit assignments. One of the limitations of the study is that we were not able to compare personal characteristics (age, gender, ethnicity) in the analysis because demographic information was not linked to specific Lifenets. We report demographic information collected for all potential participants (all students enrolled in the course). As the researchers were also course instructors, we reviewed our teaching records, making note of the eight students who did not participate. Nonparticipants were distributed across course sections (with no more than two nonparticipants in any one section) and these students' demographic characteristics appeared to reflect those of the class as a whole. However, nearly all had missed one or

more other course assignments in addition to the Lifenet exercise. One student withdrew from the course at the end of the semester. Two students wrote essays but did not upload their drawings.

We used inductive, content analytic methods to develop a coding taxonomy used to systematically describe drawing content. Research team members assigned descriptive codes to each drawing and essay, focusing on visual characteristics (drawing strategy) and content (beings, objects, institutions, and place).^{23,24} The researchers created a written description for each Lifenet assignment in the course section and then developed a coding taxonomy and a coding form for assigning codes to each drawing and essay (Appendix 2). We ensured the rigor of the study by “recoding” the same set of data and comparing results to check for consistency and accuracy. Discrepancies were resolved and the coding taxonomy was refined to reflect emerging insights into how best to capture the “essence” of these data. Inter-coder agreement (coding consistency) was acceptable. The rate of error, instances in which there was a discrepancy between the first and second round of coding, ranged from zero to four errors per category on the sample of current Lifenets examined. The study also included a reflexive, phenomenological component in which researchers reflected on the scholarly process.²⁵⁻²⁸

RESULTS

Content analysis offered a way to describe Lifenets and, in so doing, to begin to learn how to look at and learn from them. This section describes general patterns identified through content analysis. By examining and reflecting on these basic patterns, we identified possible implications for practice (topics that might be added to the course curriculum). These implications are noted in this section and revisited in the Discussion section. We conclude this section with case study portraits of three participants’ Lifenets. These portraits illustrate how Lifenet drawings can provide insights into the perceived lifeworlds and aspirations of the students we teach. The two approaches complement one another and reflect the researchers’ commitments to employing both critical realist and social constructivist epistemological perspectives in educational research.

In drawing their current Lifenets, participants used one of three main drawing strategies: maps (24%), thematic (metaphorical) depictions (24%), or collections of objects (51%). The “word bubble” drawings in Appendix 3 are abstract, schematic representations (ie, maps). The drawings in Appendix 4 are thematic, showing a mother watching her children play soccer and, later in life, standing outside her home with her family. Finally, the

drawings in Appendix 5 employ collections of objects to convey information about how the participant saw their Lifenet. Participants gave a central place to family (87%) and friends (47%), as well as non-human animals (19%) and “God” (13%). As for institutions, participants focused on education (72%) and work (41%), as well as religion (37%), leisure/travel (36%), and media (35%). Learners emphasized proximal institutions (family, religion) and deemphasized distal ones (health care, 19%; arts, 9%; government, 2%; and professional associations, 0%).

We used the same taxonomy to compare the current and future (old age) Lifenets (N=94). One student did not include an “old age” Lifenet with their submission. Participants tended to employ the same visual strategy (objects, map, or thematic) in both their current and future Lifenet drawings. A little less than half (45%) drew collections of objects, while others used maps (25%) or thematic (metaphorical) depictions (30%). While they anticipated a variety of changes, most students seemed to anticipate continuities rather than radical shifts in their relational networks when they reached old age. They suggested that current loved ones and friends would remain, along with important additions, eg, a future spouse, children, and grandchildren. Some anticipated that their number of acquaintances would expand, while others expected that they would become more focused on loved ones, resulting in fewer interpersonal connections and a simpler life. Several participants acknowledged anticipated losses, ie, loved ones who will have died by the time they themselves are old. Participants’ drawings suggest that they plan to continue to do nearly all of the activities that are important to them now in old age, with less involvement in education (40% vs 72%) and with media (12% vs 35%). Areas of strong continuity between future and current Lifenets included the centrality of family (86% vs 87%), religion (35% vs 37%), pets (17% vs 19%), and the presence of “God” (15% vs 13%) in the drawings. References to work were *more* prominent in future Lifenets (57% vs 41%), as were allusions to economics, eg, money (36% vs 26%). Notably, future Lifenets indicated that participants would have enough money in old age. Current Lifenets more often portrayed a lack of resources as students struggled to live on tight budgets. Old age Lifenets contained about the same number of depictions of health care institutions as did current ones (18% vs 19%). These references were almost always associated with anticipated health care careers. Participants did not portray themselves as recipients of health care services, ie, as patients or nursing home residents. Old age Lifenets included fewer depictions of friends (36% vs 47%) and a larger number of “other beings,” as participants imagined

themselves spending time with future spouses, children, and grandchildren (111 instances vs 65).

A closer examination of individual Lifenets reveals students' varied lives and hopes for the future. Three drawings were selected to show how students typically responded to the assignment. The drawings were chosen from a subset of assignments that seven participants gave consent to share with wider audiences. These drawings are typical of others in their idiographic uniqueness and in the care with which participants expressed their ideas. They illustrate the three main drawing strategies participants employed and provide examples of some of the patterns identified in the larger sample.

Participant 1 drew a Lifenet with colorful words describing entities that had helped her "grow into the person I am today," including her family, friends, school, and dance (Appendix 3). A triangular space at the center acknowledged those who had "changed my life and made me learn lessons I will forever live by." As with many of her classmates, she included references to her faith (church), her job, and her future career (teaching). Participant 1's future (old age) Lifenet was simpler in form, with fewer elements (words), but with more people (represented as stick figures). As with most of the participants who included religious imagery in their drawings, she anticipated that her faith would remain a part of her lifeworld, along with family and friends. While her old age drawing no longer included any reference to work or career, it expressed a commitment to her avocation, ie, dance. The essay offered her reasoning: "I never want dance not to be a part of my life." Family, she explained, is all one has left "when everyone else has left." She anticipated that her friends in old age would be "the ones who stick around through the good and the bad."

Participant 2 employed a less abstract and more realistic representational strategy, drawing a scene from her life as she sat watching her two boys play soccer (Appendix 4). Her essay explained that, "if other parents were to describe me in one word, it would be 'book.'" A self-described "older student," she focused her drawing and essay on family (mother and sons). The essay described her ongoing struggle as an impoverished single parent and student trying to make a better life for her children. Neither her current nor her future Lifenets contained any reference to career or academic major. Participant 2 hoped one day to have a home to which her children could always return. Yet much of her essay about the future remained mired in the present. She observed that she "will not be able to pay for my boys' collage [*sic*] or help them get started as other parents do." She wrote that she wanted for her boys what other parents "already have now" for their own children. She worried that she would have "to

pay off student loans for the rest of my life." Concerns arising from financial struggles and social comparison combined with self-blame as key themes in participant 2's conception of the future, which depicted a house, family, and pet (symbolizing plans to one day establish a pet sanctuary), with the same mountains in the background as those depicted in her current Lifenet. Mountains provided visual continuity between the two drawings, suggesting the primacy of [this] place now and in the future. She was home and imagined that she would remain so.

Participant 3's drawings demonstrated another visual representation strategy: that of using a set of objects to symbolically represent key elements or ideas (Appendix 5). Places played a prominent role in this student's conceptualization of her lifeworld. They depicted two US states, one with an abstract symbol and the other as a map. Family and friends were central features of Participant 3's Lifenet. Her "current" Lifenet showed a family with three children, one of them singled out with an arrow (a self-reference), surrounded by hearts (symbolizing shared love for one another). The drawing highlighted faith (church), athletics (competitive swimming), and school (B+ paper), but did not depict career or work aspirations. The participant's future Lifenet employed similar design features, but employed fewer elements (was simpler in form). Religion remained a consistent thread connecting the two Lifenets, as did "home," which was the state of Washington, represented in geographic detail. The same state map appeared in this participant's future Lifenet. In her essay, the participant explained that this was where she grew up and hoped one day to return. The self-referential arrow now pointed to an adult figure standing beside a new life partner, some children, and a two-story house.

DISCUSSION

The content analysis of Lifenet drawings was a way to identify general characteristics and systematically compare participants' submissions. Although this process did not capture the richness of the data, it was a first step in the analytical process and may prove useful in future work with Lifenets created by other groups of learners. The majority of students in the sample were in early adulthood, with an average age of 25 years. They remained deeply connected to their families and were still in the process of forming professional identities and establishing committed relationships with life partners.²⁹ As noted previously, while many students identified strong ties to spiritual and religious entities, few students expressed ties to secular institutions that define civic life. Yet secular institutions had substantial impacts on the participants' relational worlds. This suggests to us that there may be a

gap in the curriculum with respect to students' understanding of how connections to institutions influence their lives and relationships. This has implications for university educators who are preparing professionals for work in complex organizations in a democratic society, regardless of the specific field of specialization.

Participants used one of three representational strategies to depict their Lifenets. As they did so, they depicted places linked to the past, present, and imagined future. They revealed their personal concerns and daily struggles. For these relatively young adults, old age remained a distant prospect. While they anticipated a variety of changes, students emphasized continuities rather than radical shifts in their lifeworld as they grow older. Their portraits of old age depicted continued engagement with activities that are important to them today, and they anticipated looking back on successful careers, and having more time for travel, hobbies, and loved ones. Very few participants expressed concerns regarding health, safety, or financial security in old age. It is particularly important for students of pharmacy to understand the challenges posed by living a long life. The elderly are more likely than younger people to use pharmaceutical products. They have a wider variety of ailments requiring treatment. They may also present challenges with respect to communication. The ability to understand and relate to others' life experiences is an essential quality for pharmacy students to cultivate as they continue to grow in their professionalism and deepen their understanding of the various communities in which they will serve. Having young professionals confront the potential realities of their distant-future, old-age selves might help them feel more connected to elderly patients and colleagues, a strategy that warrants further research.

The results of the study are based on a limited sample of 95 Lifenets produced by students enrolled in an online course offered by a research university in the Southwestern United States. It is possible that some of this study's findings might be transferable to similar groups in other settings. More importantly, the approach itself might have utility for other researchers and educators, expanding the variety of ways Lifenets might be used, analyzed, and interpreted. One of the limitations of the study is that the exercise asked participants to draw two drawings in sequence within a single assignment. It is difficult to predict the degree to which separating the two parts of the assignment might change how students interpret and carry out the task. Future studies could explore the relevance of order effects on students' drawings. The Lifenet task was a graded course assignment. It is not possible to know the extent to which participants' drawings reflected what they believed instructors wanted to

see. Future studies could examine Lifenet drawings obtained using a research participant pool to better understand how the social context of data collection might influence results. Another limitation is that the design of the study did not include conversations with participants about how they interpreted the task or about the content of their drawings. We believe such conversations would add value and should be included in future Lifenet studies. Another limitation is that participants were not able to share and discuss their Lifenets with one another as they would have in an on-campus classroom setting. This limited opportunities for "conversations across differences" to take place in which students are invited to grapple with the complex, intersectional nature of human diversity. These concerns arise from our own individual interests and commitments as university educators and researchers, personal characteristics that have influenced every aspect of this project. We developed the coding taxonomy as one way to systematically describe and compare Lifenets based on an inductive analysis of the content of the drawings. Lifenets are open to multiple interpretations and coding strategies, which inevitably reflect researchers' interests, experiences, and values.

In line with the CAPE 2013 initiative, the Accreditation Council for Pharmacy Education (ACPE) requires pharmacy education curriculums to foster knowledge and skills that help students to become more self-aware, including an understanding of skills, abilities, and beliefs that may impact their future profession and growth.³⁰ In the future, Lifenet drawings could be used in pharmacy education classes to help build students' self-awareness while also helping educators to better understand their students. Looking at Lifenets has supported our own growth as educators. It has helped us remain mindful of developmental diversity, which is the wide range of age-related developmental tasks that our students face each day. Cultural responsiveness requires compassion, humility, and tolerance for those whose life experiences and current priorities differ from our own. Lifenets invite reflection and conversation across differences (in personal characteristics, status, and roles). This also warrants additional research.

As a pedagogical tool, the Lifenet View exercise offers educators a chance to talk with students about the potential place of professional associations in their current and future lives. Shifting students from an inward to an outward focus on their status as junior members of a professional community could deepen their identification with the field of pharmacy as one of many interrelated fields of practice. Encouraging students to learn about and become members of professional organizations in their fields might be one way to expand their (actual and

imagined) Lifenets to include secular institutions. This could, in turn, increase their access to sources of psychological and technical support when they enter the workplace as novices. Connections to health care institutions are likely to become increasingly important in old age, yet our sample of Lifenets did not reflect this reality. Encouraging students to create a conceptual space for medical and health care entities in their old age Lifenets might be useful, particularly for future pharmacists. A similar argument could be made with regard to the absence of civic and governmental institutions in Lifenet drawings. Understanding how legal, regulatory, and political institutions operate within individual lives, and appreciating the bidirectional nature of these connections, might offset some of the adverse consequences of psychological individualism for novices entering into demanding and competitive fields of professional practice.

CONCLUSION

Lifenet drawings offer insights into how a diverse group of adult learners chose to depict their social and material networks at a specific point in their life course. Having opportunities to conceptualize current relational networks and to anticipate how these may change in the future might help students to better understand themselves, be more self-aware, and connect with their own personal and professional goals.^{31,32} Analysis of Lifenets may shed light on students' conceptions of the future with respect to career aspirations, aging, and old age. Interpretation of Lifenet drawings may provide instructors with a way to better understand their students' unique identities and current challenges. Reflecting on Lifenet drawings could also help pharmacy educators become more conscious of and responsive to their students' varied life experiences.

ACKNOWLEDGMENTS

Susan (Autumn) Collins, Lori Miller, Jonathan Wheeler, and Dominick Zurlo helped to build the database of Lifenets used for this analysis.

REFERENCES

1. O'Connell M, Rodriguez de Bittner M, Poirier T, et al. Cultural competency in health care and its implications for pharmacy part 3A: emphasis on pharmacy education, curriculums, and future directions. *Pharmacotherapy* 2013;33(12):e347-e367.
2. Harding G, Taylor K. *Pharmacy Practice*. 2nd ed. Boca Raton, FL: CRC Press; 2016.
3. Harding G, Gantley M, Taylor K. Analyzing qualitative data. In: Harding G, Taylor K, eds. *Pharmacy Practice*. 2nd ed. Boca Raton, FL: CRC Press; 2016:417-423.
4. Anderson C. Presenting and evaluating qualitative research. *Am J Pharm Educ*. 2010;74(8):141.

5. Bhavsar V, Bird E, Anderson H. Pharmacy student focus groups for formative evaluation of the learning environment. *Am J Pharm Educ*. 2007;71(2):22.
6. Brandl K, Mandel J, Winegarden B. Student evaluation team focus groups increase students' satisfaction with the overall course evaluation process. *Med Educ*. 2016;51(2):215-227.
7. Solbrekke T, Sugrue C. Learning from conceptions of professional responsibility and graduates experiences in becoming novice practitioners. In: Mc Kee A, Eraut M, eds. *Learning Trajectories, Innovation and Identity for Professional Development*. Innovation and Change in Professional Education 7. Heidelberg, London, New York: Springer Dordrecht; 2012:193-214.
8. Armstrong J. Learning communities of surgeons in mid-career transformation. In: Mc Kee A, Eraut M, eds. *Learning Trajectories, Innovation and Identity for Professional Development*. Innovation and Change in Professional Education. Vol 7. Heidelberg, London, New York: Springer Dordrecht; 2012:215-234.
9. Chapple HS. *No Place for Dying: Hospitals and the Ideology of Rescue*. Walnut Creek, CA: Left Coast; 2010.
10. Cheung M, Saini B, Smith L. Drawing asthma: An exploration of patients' perceptions and experiences. *J Asthma*. 2017;55(3):284-293.
11. Silva DA, Mendonça SA, O'Dougherty M, Ramalho-de-Oliveira D, Chemello C. Autoethnography as an instrument for professional (trans) formation in pharmaceutical care practice. *Qual Report*. 2017;22(11):2926-2942.
12. Schlessman L. Teaching scholar resolutions for 2018. *Am J Pharm Educ*. 2018;82(1):Article 6940.
13. Medina M, Plaza C, Stowe C, et al. Center for the advancement of pharmacy education 2013 educational outcomes. *Am J Pharm Educ*. 2013;77(8):Article 162.
14. Aslam M, Jessa F, Wilson J. Pharmaceutical and health care needs of ethnic groups. In: Harding G, Taylor K, eds. *Pharmacy Practice*. 2nd ed. Boca Raton, FL: CRC Press; 2016:295-307.
15. Armstrong J. Lifenets and lifeways: qualitative research and the psychological sciences. Paper presented at: Southwest Consortium for Innovations in Psychology in Education inaugural meeting; November 4, 2005.
16. Armstrong J. Fostering contextual understanding in the professional education curriculum: the Lifenet view. *Multicultural Educ*. 2010;18:55-59.
17. Baltes PB. On the incomplete architecture of human ontogeny: selection, optimization, and compensation as foundation of developmental theory. *Am Psych*. 1997;52:366-380.
18. Baltes PB, Reese HW, Lipsitt LP. Life-span developmental psychology. *Ann R Psych*. 1980;31:65-110.
19. Arnett J. Emerging adulthood: a theory of development from the late teens through the twenties. *Am Psych*. 2000;55(5):469-480.
20. Gruenewald D. Foundations of Place: A multidisciplinary framework for place conscious education. *Am Educ Res J*. 2003;40:619-654.
21. Miller J. *Toward a New Psychology of Women*. Boston, MA: Beacon; 1976.
22. Fogel A, King BJ, Shanker SG, eds. *Human Development in the Twenty-first Century: Visionary Ideas from Systems Scientists*. Cambridge University Press; 2007.
23. Hsieh H, Shannon S. Three approaches to qualitative content analysis. *Qual Health Res*. 2005;15(9):1277-1288.
24. Krippendorff K. *Content Analysis: An Introduction to Its Methodology*. 3rd ed. Los Angeles, CA: Sage; 2013.
25. Bochner A. Narrative's virtues. *Qual Inquiry*. 2001;7:131-157.

26. Chang H. *Autoethnography as Method*. Walnut Creek, CA: Left Coast; 2009.
27. Ellis C, Bochner A. Autoethnography, personal narrative, reflexivity: Researcher as subject. In: Denzin N, Lincoln Y, eds. *The Handbook of Qualitative Research*. 2nd ed. Thousand Oaks, CA: Sage; 2000:773-768.
28. Smith LT. *Decolonizing Methodologies: Research and Indigenous Peoples*. London, New York: Zed Books Ltd.; 2013.
29. Lambert N, Stillman T, Baumeister R, Fincham F, Hicks J, Graham S. Family as a salient source of meaning in young adulthood. *J Posit Psychol*. 2010;5(5):367-376.
30. Accreditation Council for Pharmacy Education. Accreditation standards and key elements for the professional program in pharmacy leading to the doctor of pharmacy degree ("Standards 2016"). Published February 2015. <https://www.acpe-accredit.org/pdf/Standards2016FINAL.pdf>. Accessed September 30, 2019.
31. Lens W. Future time perspective: A cognitive-motivational concept. In: Brown DR, Veroff J, eds. *Frontiers of Motivational Psychology*. New York: Springer-Verlag; 1986:173-190.
32. Markus H, Nurius P. Possible selves. *Am Psych*. 1986;41(9):954-969.

Appendix 1. Lifenet Drawing Assignment

Watch the *Lifenet View* lecture presentation. Consider what you want your life to be like when you are very old (however you define this construct). Draw or visually represent your own Lifenet as it is today. Then create a second representation of what you hope your Lifenet will be like when you are old. Try to have the two visual representations capture as many elements of the *Lifenet View* perspective as possible.

For the assignment, create a two-page document with the following parts:

1. A photograph or scan of your Lifenet representing your life right now.
2. A paragraph discussing how the connections in your Lifenet have taught you about your abilities and your place in the social and material world. How have they supported your cognitive, socio-emotional and physical development?
3. A photograph or scan of how you would like your Lifenet to look when you are old.
4. A paragraph discussing how you think your connections to people, places and things within the net will be for you then. What do you need to do now and in the coming years to have the Lifenet you seek in old age?

The finished assignment should be no longer than 500 words and include both images. Upload to the Assignment Dropbox.

Appendix 2. Lifenet Coding Taxonomy

Coding sheet should list group ID, date Lifenets were created, number of Lifenets in the group, coder name(s), date of analysis, page # and total pages in set

ID Number (individual number assigned to each Lifenet. Write number in pencil on each net.)

SYM - Symmetry (Is Lifenet centered with equal weight on either side of center? Use "1")

ME - Is the self represented? If "me" is near center of Lifenet, use "1". If off-center, use "2".

SIZE of figure (1=less than 1/2 page; 2=about 1/2; 3=2/3 to full page)

STYLE of representation (indicate with letter **O**, **T**, **M** or **W**)

Objects - objects are used to express ideas (books, TV, car, lake, skis, dog, house)

Thematic – A metaphor is invoked - for example, the Lifenet is represented by a CD player, boat, tornado, tree, body. The theme can often be summed up in short phrase. There is a predominant visual theme rather than a collection of objects (each depicting a different concept).

Map – The Lifenet employs a schema-like or map-like style of representation.

Words – The Lifenet is depicted in words (no visual or graphic elements, all commentary).

CONTENT (Includes Beings, Objects, Institutions, Places)

Beings (indicate with "1". If unclear, use Other.)

Family

Friends

God/ Higher spiritual beings (includes this entity as a being, excludes religious symbols)

Ancestors (any persons no longer living, other than religious figures)

Pets, Animals, Wildlife

Acquaintances/Other beings (co-workers, my students, teammates, professors, teacher, bible study group)

Objects (Indicate with "1")

Natural (tree, flower, mountains, moon - excludes people and stick figures)

Man-made (cross, book, automobile, etc.)

High-tech (advanced electronic appliances, computers, cell phones, Internet)

Institutions (Indicate with "1")

Education

Religion/Church/Spirituality (church, synagogue, mosque, religious symbols, crosses, rosaries)

Media (books, TV, internet, listening to music)

Leisure Activities/Travel (working out at the gym, jogging, outdoor activities, travel, hobbies)

Art/music/dance/theater (producing visual, musical or other forms of artistic expression)

Athletics (organized sports, but not jogging or working out)

Economic (money, investments, loans)

Work

Government (federal, state, local/community. Specify in notes)

Health care (institutions that provide health care, but not "being healthy")

Other (business, club, organizations, culture. Specify in notes)

Places (Indicate with "1")

Community/Neighborhood

State (If multiple states mentioned, specify in notes.)

Nation (USA, if other country, use "Other")

Other (Home, Earth, world, Europe - specify in notes.)

Existential states, qualities (emotional or existential conditions, peace, happiness, joy, anxiety)

Traits (personality characteristics, eg, helpful, frugal, hard-working, ambitious)

Appendix 3. Participant One's Lifenet Drawings

The top drawing represents the present. The bottom drawing represents the future.

Appendix 4. Participant Two's Lifenet Drawings

The lifenets depict life as a single mother watching her boys play soccer and her anticipated future life as a grandparent.

Appendix 5. Participant Three's Lifenet Drawings

The Lifenets employ objects to describe the student's current and future relationships, activities and values.