NIH Public Access
Author Manuscript
Ann Hum Biol. Author manuscript; available in PMC 2010 May 12.

Published in final edited form as:
Ann Hum Biol. 2009 ; 36(3): 248–260. doi:10.1080/03014460902832942.

Moving from ethnography to epidemiology: lessons learned in Appalachia

Ryan A. Brown, PhD [Assistant Professor],
Human Development & Social Policy / Anthropology School of Education & Social Policy, Northwestern University 2120 Campus Drive, 205 Annenberg Hall Chicago, IL 60208 Phone: 847 491 3884 Email: ryan-a-brown@northwestern.edu

Jennifer Kuzara, MA, MPH [PhD Candidate],
Department of Anthropology Emory University

William E. Copeland, PhD [Assistant Clinical Professor of Psychiatry and Behavioral Sciences],
Department of Psychiatry and Medical Sciences, Duke University Medical Center

E. Jane Costello, PhD [Professor of Medical Psychology],
Department of Psychiatry and Medical Sciences, Duke University Medical Center

Adrian Angold, MRCPsych [Associate Professor of Psychiatry and Behavioral Sciences], and
Department of Psychiatry and Medical Sciences, Duke University Medical Center

Carol M. Worthman, PhD [Samuel Candler Dobbs Professor of Anthropology]
Emory University, Department of Anthropology

Abstract

Background—Anthropologists are beginning to translate insights from ethnography into tools for population studies that assess the role of culture in human behavior, biology, and health.

Aim—We describe several lessons learned in the creation and administration of an ethnographically-based instrument to assess the life course perspectives of Appalachian youth, the Life Trajectory Interview for Youth (LTI-Y). Then, we explore the utility of the LTI-Y in predicting depressive affect, controlling for prior depressed mood and severe negative life events throughout the life course.

Subjects and methods—In a sample of 319 youth (190 White, 129 Cherokee), we tested the association between depressive affect and two domains of the LTI-Y - life course barriers and milestones. Longitudinal data on previous depressed mood and negative life events were included in the model.

Results—The ethnographically-based scales of life course barriers and milestones were associated with unique variance in depressed mood, together accounting for 11% of the variance in this outcome.

Conclusion—When creating ethnographically-based instruments, it is important to strike a balance between detailed, participant-driven procedures and the analytic needs of hypothesis testing. Ethnographically-based instruments have utility for predicting health outcomes in longitudinal studies.

Keywords

Appalachia; depression; population health; life course; American Indian

Correspondence to: Ryan A. Brown.

NIH-PA Author Manuscript
NIH-PA Author Manuscript
NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

Introduction

At a recent meeting with an interdisciplinary research team on the social determinants ofs health, a demographer exclaimed “I wish someone would just create a quick and straightforward way to measure culture, so I could include it in my survey design and be done with it.” This individual was clearly frustrated with the complexity of cultural explanations for the patterning of human suffering and disease. Many anthropologists might scoff at this statement; after all, we know that culture is nuanced and locally variable – you cannot throw in a one-size-fits-all culture measure, walk away, and let it do the work. But, hidden in this demographer's intentionally provocative remark was an earnest request for anthropologists to produce methods that are capable of examining the role of culture in human health and well-being in a quantitative, hypothesis-testing framework. Anthropology has largely failed to do this, preferring often to privilege the complexity of our case studies or to critique the hegemony of quantitative methods instead of developing ethnographically-based methods that are capable of ruling out alternative explanations.

Ethnographic research based on a limited number of case studies can certainly suggest new directions for epidemiological research. However, the best storytellers and the individuals in a community most receptive to outsiders may not be particularly representative of the mean or modal pattern in the community itself (Handwerker, 2003), which could lead such ethnographically-based approaches easily astray. Moreover, our interpretations of case studies in ethnographic data are rife with bias, including the tendency of ethnographers to romanticize the communities in which the work (Rohner, DeWalt, & Ness, 1973). Finally, the strategy of moving directly from ethnography to epidemiology does not directly build information about the *content* of cultural process directly into epidemiological databases. This requires additional translational steps, which we illustrate in these pages.

It is time to move beyond our armchair critiques and to translate key insights from ethnography into tools that can be used by epidemiologists, demographers, and other population health researchers concerned with causal inference regarding human behavior, biology, and health. This brings us naturally to the question posed by this special issue (and by the original AAA session that inspired the issue); how does one measure culture in large-scale epidemiological studies? The answer depends on the outcomes of interest and the (proposed) causal pathways to these outcomes. In our current state of knowledge and methodological development, this question is most easily answered through a set of examples.

One strategy is to find creative ways to examine the impact of culture within the general bounds of existing epidemiological methods. For example, case-control models examine the impact of a specific exposure on a population. If such studies are designed, conducted, and interpreted by a researcher with deep local knowledge who is simultaneously engaged in ethnographic work, culture's influence can be uncovered in specific sub-population patterns of risk and resilience to the exposure of concern. For example, Kohrt shows how intersections of sex and traumatic experience yield increased vulnerability to the impact of child soldiering in Nepal because of cultural constructions of gender (Kohrt et al., 2008).

Another strategy for studying the impact of culture is to compare cases and non-cases of symptom clusters that do not fit standard biomedical diagnoses, but have recognizable symptomatic and etiologic patterns in certain populations, Often, the forms and features of these symptom clusters are connected to local ways of understanding the world. The anthropological focus on meaning-making in context has yielded especially useful knowledge in such cases, as shown for example by Peter Guarnaccia's research on *ataques de nervios* (Guarnaccia, 1993).

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

There is also a broader approach. This begins with the notion that "culture matters," and engages wide-ranging research methods to uncover the workings of culture in a given population. This often starts with open-ended interviews or other ethnographic methods, and proceeds to more structured tools such as focus groups or individual freelists. The yield of this has been impressive and far-reaching. For example, Dressler has illustrated how attained cultural goals emphasized and agreed upon by one's social group can protect against both physical and psychological disease risk (Dressler, Balieiro, & dos Santos, 1998; Dressler & Bindon, 2000).

We will present one case example of this broader approach; work conducted with a longitudinal study of mental health in western North Carolina, and involving a sample of 1,420 Cherokee and White youth interviewed every 1−2 years starting at ages 9, 11, and 13, the Great Smoky Mountains Study or GSMS (Costello et al., 1996). With the GSMS sample, we took on what was in restrospect an extremely broad and ambitious goal. This was to develop an instrument that would capture GSMS youths' psychological models of the life course (hopes and dreams, expectations, perceived roadblocks, etc.). Our goal was to create an instrument that would collect data in an ethnographically nuanced, personally meaningful way, yet would also produce quantitative data amenable to epidemiological analysis and population-level generalization.

Our research team has now spent over three years analyzing the data collected from 2002−2005. We report several lessons learned over the past six years of instrument development, data collection, and analysis. Further, we provide one illustration of how a long period of investment in method development can pay off in analytic terms. Specifically, we test the ability of our ethnographically-based approach to predict mental health outcomes when compared with an accepted "gold standard" approach to the measurement of stressors and risk factors.

Instrument Development

Particularities and Generalities

It is very easy to get lost in details when a researcher enters the field with the goal of assessing broad cultural domains such as the life course. In our case, we spent almost as much time developing the instrument as we did administering the final version with our main sample! Through a combination of life history interviews, focus groups, and pilot card sort interviews taking 13 months and involving 150 participants outside the main study, we developed an instrument that was applied with 350 GSMS participants over an 18-month span, the Life Trajectory Interview for Youth or LTI-Y (Brown, Worthman, Costello, & Erkanli, 2006).

The LTI-Y is specifically adapted to the life goals and concerns of Appalachian (both White and Cherokee) youths during the transition to adulthood. It asks participants to perform a variety of sorting, ranking, and response tasks with four different sets of cards; 12 life course milestones (e.g., get married, finish high school), 20 socioemotional resources (social and emotional properties considered important for life course success; e.g., community connections, determination), 15 material goods (e.g., fancy car, nice clothes), and 20 life course barriers (e.g., going to jail, dropping out of school).

With a well-trained interviewer the respondent can complete the full protocol in 90 minutes, but it can be quite cognitively exhausting for both parties. While the physical nature of holding and sorting cards can keep participants engaged, it is nevertheless a difficult task that requires careful attention of both the interviewer and interviewee. In a more recent version of the instrument (which is being used when GSMS participants turn 25), we kept only a subset of tasks and simplified some of the procedures; the revised instrument can be completed in less than half an hour.

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

While it is easy to become lost in details during the method development stage, it is also possible to overlook what might seem like annoying minutiae but could be crucial factors for describing or understanding a population. When producing a single instrument for a diverse population (in this case 12 counties, almost 100 census tracts, and two ethnic groups), it is tempting to gloss over or ignore interesting intracultural variability. For example, several focus groups nominated "tattoos & body piercings" as important aspects of the good life, and others nominated "going to jail for the first time" as an important (positive) life course milestone. However, the final version of the LTI-Y only included the items ranked highly by the sample *on average.* As the aforementioned two items were popular with only a small number of individuals, neither of them made it into the final instrument. In retrospect, allowing for some items that were highly salient to subsets of individuals would likely have likely provided important leverage for delineating variability in life course values and preferences.

Letting Participants Lead the Way

When designing a quantitative instrument based on ethnographic work, it is both critical and difficult to achieve a balance between theoretically driven, largely "pre-field" notions of "how things work" and the respondent-driven understandings the researcher gains while in the field. It is crucial to note that fields outside of anthropology (especially psychology) will generally not reward the researcher for such creative methodological forays. However, the following example illustrates how crucial it can be to let participants guide decisions during method development.

During early focus group sessions, we had several preconceived notions about models of the life course. In one case, we had decided that "the things that help you achieve major life goals" and "the things that make you happy and satisfied in life" were two separate domains of life worthy of individual inquiry. In our minds, one category represented a "helping hand" during the life course, while the other was composed of desirable life course endpoints. But, during group and individual freelisting tasks, pilot participants listed largely overlapping items for each category. In other words, our participants were collectively and indirectly stating that the same things that make one happy and satisfied in life also help one to attain highly valued life goals; according to Appalachian youth, the means were also the ends.

Responding to the collective voices of our pilot participants, we created a combined category of items, termed "socioemotional resources," including diverse elements of social support, social status, social activities, and personal emotional coping. Treating this domain of items as a set of outcomes as well as facilitators yielded a highly useful index that has, for example, allowed us to estimate locally meaningful and age-relevant determinants of subjective social status among youth in the region (Brown et al., 2008).

Still, treating these diverse social and psychological elements of the life course as a unitary domain (driven by participants' responses) collapses categories of items considered different in prevailing sociological and psychological approaches to the life course (Grant & Dweck, 2003; Heckhausen, 1999). Violating these assumptions has led to confusion, frustration, and even anger from reviewers. Trostle points to exactly this tendency of epidemiological researchers to privilege their own cultural models over those of their participants (Trostle, 2005). Meanwhile, while some quantitative research may still be intent on separating "psychological" and "social" factors, it is telling that the intervention world – which often has more direct contact with individuals - has realized the inherent overlap of psychological and social, tending towards an integrative psychosocial model (de Jong, 2002). On balance, ethnographic honesty and the strong relationship of soceioemotional resources with other outcomes of interest (Brown et al., 2008) have made the academic battles worth fighting.

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

Presumptions of Group Difference

We also entered the field with a strong prior expectation that the life course expectations and goals would differ dramatically between White and Cherokee youth. In other words, we expected quite different content in response to our focus group and interview queries such as, "What are the important things for a person to achieve in life?" After all, almost all Cherokee youth live on the Qualla Boundary reservation, have a distinct ethnic identity, and are subject to a different governmental structure than surrounding whites. There were thus many reasons to expect ethnic differences in the content of life course models. As a result, we expected that we would have to create two versions of the LTI-Y; one for Cherokee youth and one for White youth.

Ethnographic experiences revealed that Cherokee and White identity were blurred and contested in ways that complicated a clear ethnic distinction. The Eastern Band of the Cherokee Indian has seen considerable admixture from surrounding Whites over the years, and some neighborhoods on the reservation were openly labeled as the homes of "White Indians" (both phenotypically and culturally). One Cherokee participant was described admiringly by his Cherokee friends as "true redneck." Meanwhile, White participants often enjoyed talking about their Cherokee heritage, and local Whites would often display large "True Native" signs on their vehicles (meaning natives of the area rather than Native American Indian).

Given this ethnographic evidence, perhaps we should not have been surprised when Cherokee and White youth listed (and ranked) strikingly similar items during the creation of the LTI-Y. Similarly, piloting of the LTI-Y led to both White and Cherokee participants indicating that the LTI-Y "really captures peoples' concerns out here." As a result, our expectation of needing to create two versions of the LTI-Y was trounced. Contrary to our often strong expectations of cultural particularity, it is sometimes easier than expected to translate local knowledge into an instrument that can be used across multiple groups.

While enjoying the sport of deconstructing the essentialism inherent in definitions of ethnic groups, anthropology remains quite wedded to the notion of deep and incommensurate group differences in worldview. After all, adhering to the assertion that, "You could not possibly understand how a Xanderphyte understands the world unless you were Xanderphyte (or possibly an anthropologist who has lived with the Xanderphytes and speaks their language)" helps to rarify anthropological knowledge and defend the boundaries of the field.

Thus, the notion that we could use a single instrument to assess the life course perspectives of both Cherokee and White youth upset many anthropologists during early presentations of LTI-Y analyses. Subsequent analyses did, however, show that Cherokee and White construct the *same* life course content in quite *different* ways (Brown et al., 2008). This finding would have been impossible to obtain were we to have forced our preconceptions of ethnic differences onto the development of the LTI-Y. In a way such findings vindicate expectations of ethnic differences, but show that such ethnic differences often take a subtle form that is often impossible to detect (or test) without creating detailed quantitative databases of cultural content.

Instrument Administration and Interpretation

It would be wrong to claim that we were always insightfully prescient or completely open to our local participants' concerns. In one case, rather than respond to our participants' concerns, we decided to go ahead with a style of data collection that would simplify later statistical analysis. During ranking and sorting tasks involving the twelve life course milestones, participants often wanted to lump groups of items together as having equivalent importance and being a "package deal" (Townsend), such as getting a college degree and obtaining a career,

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

being married and having children, etc. These participants were quite stymied by our requests to rank one of these items above the other in importance (or even difficulty), as they considered them to be inexorable parts of a whole; one does not come without the other, or would be impossible without the other.

Regrettably, we did not build in a data collection procedure that would have allowed for us to code this "lumping" of items into groups. Instead, we pressed on with our original plans, forcing these participants to rank items whether they believed this was a credible task or not. In later analyses, ranked importance data of milestones and other life course domains generally did not exhibit strong or coherent associations with other axes of data. While this may be due to many reasons, it certainly did not help that we forced noise into the data by not allowing participants to create what they often felt were "natural" groupings of items with equivalent importance. The lesson, in retrospect, was that we should have listened more closely to our participants.

Thus far, we have recommended letting participants strongly guide content and process during method development. Nevertheless, this is not always possible or feasible. Most ethnographers have had the experience of a participant wanting to take them on a tour of all of their favorite places and tell them all of their favorite stories (day after day). Such strong-minded and vocal individuals often become the key (or sometimes only) voices in ethnographies that purport to describe the cultural machinations of entire regions of the world. Such individuals, while good story tellers, may not represent the predominant or average perspective of their peers or communities (Handwerker, 2003).

Likewise, during the creation and administration of the LTI-Y, some participants wanted to discuss and deconstruct every item and dimension of the LTI-Y card sort with counterexamples, caveats, and qualifiers. Great storytellers, after all, prefer to use their own narrative structure rather than one that is provided to them. Such discussions produced very interesting interview content. However, were we to take on board every variation and suggestion of these participants, we would have produced an unwieldy and burdensome interview task that would be extremely difficult to administer across individuals (much less analyze). When the goal is to produce population-relevant understandings and insights, sometimes a desire for specificity must be weighed against the need to produce data that are interpretable across subjects.

One advantage of the LTI-Y is that it is a highly structured interview that nonetheless allows participants to describe their life course perspectives in rich detail. The result, shown in Figure 1 for a single participant drawn at random (for one life course domain – life course milestones) contains many layers of information. For example, we know that Rusty considers 16 years old to be the ideal age to have children, and 20 years old the ideal age for marriage. We also know that he feels settling down (an item included at the insistence of participants that refers to establishing more regulated, responsible patterns of behavior) is the most important milestone in his life, and obtaining financial security is the most difficult. Finally we know that he has obtained a vehicle, gotten a job, and graduated high school, but has yet to obtain a career, to move out of his parents' home, or to get married.

It can be challenging to move between the rich detail of Rusty's individual life course model to meaningful population-level findings. For example, three of the items that Rusty included in his list of essential life course milestones (and that are considered classical life course milestones by life course theorists) – having children, acquiring a house, and getting married - were not included as essential life course goals by a considerable percentage of the GSMS population; 44%, 34%, and 28%, respectively. It is noteworthy that such a high proportion of participants found such "classical" milestones to be relatively unimportant. These findings make sense in the light of the literature on emerging adulthood in the U.S. and Europe, a cultural

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

and demographic phenomenon characterized by youth in their 20s and 30s emphasizing play, travel, and acquiring diverse experiences over career, reproduction, residential stability, etc. (Arnett, 1998, 2000).

Yet, this "emerging adulthood" pattern is far from universal; as illustrated by Rusty's life course model. In fact, 56% of the LTI-Y sample *did* include having children as an essential life event, meaning participants were evenly split about the importance of this life event. To make sense of such variability in cultural models, Romney, Weller, Dressler, and others have developed a set of quantitative tools for assessing the degree of consensus around modal ideals and values in a population (Boster & D'Andrade, 1989; William W. Dressler & Bindon, 2000; Handwerker, 2002; Pelto & Pelto, 1997; Romney, Weller, & Batchelder, 1986). However, the modal approach may not always be enough. In cases of particularly high population variability (such as found in this sample), Hruschka has demonstrated that multiple identifiable models may be present, requiring the data analyst to test for and describe these multiple models rather than assume a modal pattern of beliefs (Hruschka, Kalim, Edmonds, & Sibley, 2008).

The Utility of Ethnographically-Based Instruments: A Test Case

While it is interesting to observe and describe variability in life course models attainment, the true test of cultural epidemiology lies in whether ethnographically-based instruments relate to biological and health outcomes in meaningful or novel ways. This section tests how ethnographically defined *life course barriers* (perceived impediments to desired life course progress) and the attainment of *life course milestones* in the LTI-Y relate to depressive affect among GSMS youth.

The availability of longitudinal data from GSMS allows us to perform a particularly stringent test of the utility of these ethnographically based constructs. We control not only for previous reports of depressive affect, but also the lifetime accumulation of DSM-IV stressful life events, assessed at several points throughout the life course. This allows us to determine whether life course milestones and barriers are associated with unique variance in depressive affect not predicted by an existing pattern of depression or by cumulative life stress.

Methods

Sample—The Great Smoky Mountain Study or GSMS (Costello et al., 1996) includes 1420 participants. Of the total, 349 are enrolled members of the Eastern Band of the Cherokee Indian including all eligible Cherokee aged 9, 11, or 13 in 1993 who agreed to participate in the study (95% screened, 81% recruited). The remaining 1070 participants are a representative sample of youth living in 12 counties within western North Carolina. Potential participants were selected from the population of some 20,000 children using a household equal probability, accelerated cohort design (Schaie, 1965), and were oversampled for risk using a phone-screening interview. A full description of the methods used in GSMS recruitment and data collection can be found in (Costello et al., 1996).

This study uses a sample of 350 GSMS participants interviewed with the Life Trajectory Interview for Youth (LTI-Y) when they were between 19 and 24 years of age (Brown et al., 2006). The sample was drawn to create an even distribution of major risk exposures across Cherokee and White males and females; additional information about the sampling strategy can be found in (Brown et al., 2006). Due to missing data, the total analytical sample was 319 (190 white, 129 Cherokee).

Depressed mood—Depressed mood measured by the Mood and Feelings Questionnaire, MFQ (Messer et al., 1995). The MFQ was developed to assess the ability of current (last 2 weeks) mood to predict psychiatric outcomes (Westermann, Spies, Stahl, & Hesse, 1996); it

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

has excellent psychometric properties and very good predictive characteristics for psychiatric diagnoses (Angold et al., 1995). The questionnaire contains thirteen symptoms (see Appendix 1), with the possible response options of “not true” (scored as 0), “sometimes true” (scored as 1), and “true” (scored as 2); this yields a scale range from 0 to 26.

Negative life events—The circumstances and experiences (poverty, family stability, life events, etc.) of GSMS participants were assessed every year between the ages of 9 and 16, and every 2−3 years thereafter (Angold & Costello, 2000). For the purposes of this study, we include an index of lifetime exposure to 10 DSM-IV stressful life events (see Appendix 2). These are comprised of relatively rare, extreme events that are not expected to be highly correlated, but have similar impacts on psychological functioning (Association, 2000; Copeland, Keeler, Angold, & Costello, 2007). The items have very good consistency and reliability, as well as excellent discriminant validity (Costello, Angold, & Fairbank, 1998). Exposure at any age was assigned a “1” and no exposure a “0,” resulting in an index ranging from 0−10.

Life course barriers and milestones—The LTI-Y includes an ethnographically based (developed via 21 ethnographic interviews, 12 focus groups involving 54 unique individuals, and 32 pilot card sort interviews) scale of barriers to life course attainment, comprised of 20 items (see Appendix 3). Participants used a 5-point Likert scale to report the extent to which each barrier was present in their own life. Three items are clearly confounded with depressive affect; these include “Being angry or overly emotional,” “Depression/anxiety,” and “No motivation/laziness,” and were dropped from these analyses. Scores on the remaining 17 items ranged from 0 (strongly disagree) to 4 (strongly agree). These scores were summed, resulting in a scale ranging from 0 to 68, with a Cronbach's alpha scale consistency of .72.

The LTI-Y also includes the domain of “life course milestones” (developed via 21 ethnographic interviews, seven focus groups involving 22 unique individuals, and 72 pilot card sort interviews), which is comprised of twelve events that local youth considered the most important to achieve in life (see Appendix 4). Participants were asked whether they had achieved or attained each life course milestone; “yes” was assigned a “1” and “no” a “0.” Scores for all life events were summed, yielding an index ranging from 0 to 12, with a KR-20 scale consistency of .62 (Brown, Worthman, Costello, & Erkanli, 2006).

Analytic strategy—For prior MFQ and traumatic life events, we drew from the GSMS interview directly preceding the LTI-Y, an average of 1.36 ± .09 [SE] years prior. Due to distribution of MFQ scores and the over-representation of 0's, we ran zero-inflated Poisson regression models, using Stata MP 10.1 (StataCorp, 2008). All analyses were performed with sampling weights, which corrected for the deliberate oversampling of behavioral risk among White youth in GSMS (Costello et al., 1996) as well as the deliberate oversampling of Cherokee. All independent variables were standardized (mean = 0, SD = 1), and incident risk ratios reported. The first model included age (years, months, and days), ethnicity, sex, prior MFQ, and traumatic life events. In the second model, we added life course barriers and milestones from the LTI-Y to examine unique variance explained in depressive affect by these variables.

Results

Dependent and independent variables were approximately equivalent across Cherokee and White participants, with Cherokee youth reporting higher levels of life course barriers (see Table I). Not surprisingly, prior MFQ was correlated with MFQ at the time of the LTI-Y (r = .44, p < .0001). None of the independent variables were correlated above r = .26 (see Table II)

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

In Model 1, both prior MFQ and negative life events were significant predictors of depressed mood at the time of the LTI-Y interview (roughly one year later), with a total model r^2 of .21. Model 2 added two domains from the LTI-Y, life course barriers and milestones. In Model 2, prior MFQ continued to predict depressed mood. Both LTI-Y barriers and milestones were significant predictors ($p < .05$, $p < .001$, respectively). Life course barriers were associated with more depressed mood, while higher attainment of life course milestones was associated with less depressed mood. Together, these variables accounted for an 11% increase in variance explained. Additionally, two trends associated with sex and ethnicity from Model 1 were statistically significant in Model 2; namely, the tendency of Cherokee participants to report lower depressed mood and female participants to report higher depression. In Model 2, negative life events were no longer a statistically significant predictor of depressed mood ($p = .14$).

Limitations

Many studies are moving towards ethnographically-based, locally validated instruments to assess psychological distress and psychiatric morbidity (Devon, Phalnarith, Sonith, & Khin, 2000; Fox, 2003). This is highly important, as anthropological research has shown that psychiatric and neurological disorders ranging from neurasthenia (Kohrt, Hruschka, Kohrt, Panebianco, & Tsagaankhuu, 2004) to anxiety (Guarnaccia, 1993) may present with different symptoms across different cultural contexts. In this case, we did not have the benefit of a locally developed index of depressive symptoms or psychiatric distress. It is possible that such an index would produce a better model fit than we were able to obtain in the present analyses. Furthermore, LTI-Y variables in this analysis can be considered “privileged” in that they were collected concurrently with MFQ scores. Future analyses will examine the capacity of LTI-Y variables to predict psychiatric outcomes prospectively.

Discussion

The long process of method development and careful attention to local cultural context seems during the construction of the LTI-Y seems to have paid off. Specifically, the ethnographically derived scales of life course barriers and milestones predicted unique variance in depressive affect over and above prior depression and a cumulative index of life course exposure to negative life events. This is not to say that ethnographically based work should supplant the existing tools of psychiatric epidemiology. However, ethnographically-based tools may help identify stressors and life course perspectives more proximal to psychological distress and psychiatric outcomes, and should be employed in concert with existing instruments and longitudinal measurement. Such “experience-near” predictors of psychological distress may be a good place to focus in therapeutic and intervention work, as larger structural forces and associated severe life events are much further “upstream” and are arguably harder to intervene upon.

One key challenge in moving towards a cultural epidemiology is designing instruments that describe cultural processes relevant to health outcomes. We outline one approach to creating such an instrument; in this case, the development of a tool to assess cultural models of the life course among Appalachian youth, and its relationship with mental health. Our research team learned several key lessons in the development and administration of the LTI-Y. First, we learned that it is important to pay attention to atypical item suggestions that might not fit with the mean or modal pattern, but have salience for specific subgroups. An overarching lesson was to listen to participants and let participants’ responses guide method development, even if their voices violate strongly held prior expectations. In our case, participants led us to violate prevailing life course theory, collapsing what are thought to be two life course domains into one (socioemotional resources). Participants also led us to discard our prior presumptions of strong ethnic differences in the content of life course goals. This has allowed us to detect

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

interesting ethnic differences in the construction and meaning of such goals (Brown, Hruschka, & Worthman, 2009), rather than becoming mired in a fruitless search for ethnic differences in goal content.

The LTI-Y was developed via in-depth, participant-driven research that informed not only the content but also the *design* of the LTI-Y; i.e., how it is administered. The various cardsort-based tasks in the LTI-Y allow participants to view multiple life events, goals, and barriers at once, and to physically and visually manipulate these items until they are satisfied that the resultant model adequately describes their own life course. This helps satisfy our goal in designing the LTI-Y, which was to develop a set of tasks that felt intuitively "right" to participants, and to some extent mimicked the processes of anticipation, prioritization and tradeoff that occur in the "real" world of life course planning, striving, attainment, and frustration.

Moving from the ethnographic field setting to the world of quantitative analysis is a journey that is fraught with frustrations, but also unexpected surprises, and (ultimately) fresh insights about human lives, suffering, and health. The primary goal of this paper is to convince cultural, biological, medical, and psychological anthropologists that it is eminently possible to transform the "blooming, buzzing confusion" of variability and specificity in human lives into quantitative instruments that retain this variability but also allow generalization to the population level. More than mere descriptive tools, such instruments promise to be interesting to the growing field of population health, as well as the more traditional disciplines of demography, epidemiology, sociology, and psychology. While not mainstream in anthropology at present, our hope is that the discipline will begin to treat such efforts as valid and important approaches to describing human lives and social systems, as well as making this information accessible to quantitative analysis.

Acknowledgments

Research was supported by the W.T. Grant Foundation (DS804 383-2854 to Costello, Worthman, and Brown), the National Institutes of Health (NIMH NRSA 5 F31 MH064253-02 to Brown), and a Russell Sage Foundation Faculty Scholarship (Worthman). The editors of this special issue provided crucial feedback on an earlier draft. Thanks to field interviewers Gabe Cyr and Catherine Cook, and to the field staff of GSMS (Lisa Crisp, Wanda Burns, Rebecca Woodard, Shelda Calhoun, Shawn Barger, and Ellen Pfirrmann). Marge Hays, Gordon Keeler, and Jurgen Henn provided administrative and technical support. Finally, we recognize the crucial contributions made by continued involvement of GSMS participants and their families.

Appendix 1

Mood and Feeling Questionnaire

- I felt miserable or unhappy
- I didn't enjoy anything at all
- I was very restless
- I felt I was no good any more
- I found it hard to think properly or concentrate
- I hated myself
- I was a bad person
- I felt lonely
- I thought nobody really loved me

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

- I thought I could never be as good as other people
- I did everything wrong

Appendix 2

Negative life events

- One or more loss events (death of loved one, relationship break-up, parental divorce)
- Learned about traumatic event
- Diagnosed with physical illness
- Serious accident
- Natural disaster
- Fire
- Exposure to noxious agent
- Physical abuse or captivity
- Sexual violence or abuse
- Other violent events (exposure to war/terrorism, caused death or severe harm, sibling/peer death due to violence)

Appendix 3

Life course barriers

- Stress / time pressure
- Major loss: divorce, illness, heartbreak, accident, death of friend / family
- Pressure to help family or friends
- Overspend / go into debt
- Lack of jobs & lack of educational opportunities / resources
- Fights / conflict / tension with friends, family, or community
- Partying too much
- Hang with the wrong crowd
- Things that hold you back from college (homesick, traveling, money, stress, etc.)
- Always going for the thrill / impulsive
- Have kids too early
- Drop out of high school or college
- Get married or settle down too early
- Addiction (drugs, alcohol, etc.)
- Bad experiences in school (with teachers, students, counselors, etc.)
- Community or family holds you back / discourages you
- Jail / prison / trouble with the law

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

Appendix 4

Life course milestones

- Driver's license
- Get college, technical, or vocational degree
- Get first car or truck
- Get first house (or trailer, modular home, etc.)
- Get permanent job / career
- Have and raise kids
- Have financial security (savings, investments etc.)
- High school graduation or GED
- Marriage or live together with someone
- Move out of parents' house
- Settle down / be more responsible
- Start first job

References

Association, AP. Diagnostic and statistical manual of mental disorders (Revised 4th edition). Washington, DC: 2000.

Angold A, Costello E. The Child and Adolescent Psychiatric Assessment (CAPA). Journal of the American Academy of Child & Adolescent Psychiatry 2000;39(1):39–48. [PubMed: 10638066]

Angold A, Costello EJ, Messer SC, Pickles A, Winder F, Silver D. The development of a short questionnaire for use in epidemiological studies of depression in children and adolescents. International Journal of Methods in Psychiatric Research 1995;5:237–249.

Arnett JJ. Learning to stand alone: The contemporary American transition to adulthood in cultural and historical context. Human Development 1998;41(5−6):295–315.

Arnett JJ. Emerging adulthood: A theory of development from the late teens through the twenties. American Psychologist 2000;55(5):469–480. [PubMed: 10842426]

Boster J, D'Andrade R. Natural and human sources of cross-cultural agreement in ornithological classification. American Anthropologist 1989;91(1):132–142.

Bronfenbrenner, U. The Ecology of Human Development: Experiments by Nature and Design. Harvard University Press; Cambridge. MA: 1979.

Brown RA, Adler NE, Worthman CM, Copeland WE, Costello EJ, Angold A. E. a. H. Cultural and community determinants of subjective social status among Cherokee and White youth. Ethnicity and Health 2008;13(4):289–303. 13(4):289−303. [PubMed: 18701990]

Brown RA, Hruschka DJ, Worthman CM. Cultural models and fertility timing among Cherokee and white youth in Appalachia: Beyond the mode. 2008 Accepted for publication by *American Anthropologist*.

Brown RA, Worthman CM, Costello EJ, Erkanli A. The Life Trajectory Interview for Youth (LTI-Y): method development and psychometric properties of an instrument to assess life-course models and achievement. International Journal of Methods in Psychiatric Research 2006;15(4):192–206. [PubMed: 17266015]

Clark DB, Lesnick L, Hegedus AM. Traumas and Other Adverse Life Events in Adolescents With Alcohol Abuse and Dependence. Journal of the American Academy of Child and Adolescent Psychiatry 1997;36(12):1744–1751. [PubMed: 9401336]

Copeland WE, Keeler G, Angold A, Costello E. Traumatic events and posttraumatic stress in childhood. Archives of General Psychiatry May;2007 64(5):577–584. [PubMed: 17485609]

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

Costello EJ, Angold A, Burns BJ, Stangl DK, Tweed DL, Erkanli A, et al. The Great Smoky Mountains Study of youth: Goals, design, methods, and the prevalence of DSM-III-R disorders. Archives of General Psychiatry 1996;53(12):1129–1136. [PubMed: 8956679]

Costello EJ, Angold A, Fairbank J. Life events and post-traumatic stress: the development of a new measure for children and adolescents. Psychological Medicine 1998;28:1275–1288. [PubMed: 9854269]

Costello EJ, Erkanli A, Fairbank JA, Angold A. The Prevalence of Potentially Traumatic Events in Childhood and Adolescence. Journal of Traumatic Stress 2002;15(2):99–112. [PubMed: 12013070]

de Jong, J., editor. Trauma, War, and Violence: Public Mental Health in Socio-Cultural Context. Kluwer Academic / Plenum Publishers; New York: 2002. The Springer Series in Social/Clinical Psychology.

Devon H, Phalnarith B, Sonith P, Khin U. Panic disorder among Cambodian refugees attending a psychiatric clinic: Prevalence and subtypes. General hospital psychiatry 2000;22(6):437–444. [PubMed: 11072060]

Dressler WW, Balieiro MC, dos Santos JE. Culture, socioeconomic status, and physical and mental health in Brazil. Medical Anthropology Quarterly 1998;12(4):424–446. Med Anthropol Q. [PubMed: 9884992]

Dressler WW, Bindon JR. The health consequences of cultural consonance: Cultural dimensions of lifestyle, social support, and arterial blood pressure in an African American community. American Anthropologist 2000;102(2):244–260.

Fox SH. The Mandinka Nosological System in the Context of Post-Trauma Syndromes. Transcultural Psychiatry 2003;40(4):488–506. [PubMed: 14979464]

Grant H, Dweck CS. Clarifying Achievement Goals and Their Impact. Journal of Personality & Social Psychology Sep;2003 85(3):541–553. [PubMed: 14498789]

Guarnaccia PJ. Ataques de nervios in Puerto Rico: Culture bound syndrome of popular illness. Medican Anthropology 1993;15(2):157–170.

Handwerker WP. Construct validity of cultures: cultural diversity, culture theory, and a method for ethnography. American anthropologist 2002;104(1):106–122.

Handwerker, WP. Sample Design.. In: Kempf-Leonard, K., editor. Encyclopedia of Social Measurement. Academic Pres; San Diego, CA: 2003.

Heckhausen, J. Developmental regulation in adulthood: Age-normative and sociostructural constraints as adaptive challenges. Cambridge University Press; New York, NY: 1999.

Hruschka DJ, Kalim N, Edmonds JK, Sibley LM. When there is more than one answer key: cultural theories of postpartum hemorrhage in Matlab, Bangladesh. Field Methods 2008;20(4):315–337.

Kessler RC. The Effects of Stressful Life Events on Depression. Annual Reviews of Psychology 1997;48:191–214.

Kohrt BA, Hruschka DJ, Kohrt HE, Panebianco NL, Tsagaankhuu G. Distribution of distress in post-socialist Mongolia: a cultural epidemiology of yadargaa. Social Science & Medicine Feb;2004 58 (3):471–485. [PubMed: 14652045]

Kohrt BA, Jordans MJD, Tol WA, Speckman RA, Maharjan SM, Worthman CM, et al. Comparison of mental health between former child soldiers and children never conscripted by armed groups in Nepal. JAMA 2008;300(6):691–702. [PubMed: 18698067]

Mazure CM, Bruce ML, Maciejewski PK, Jacobs SC. Adverse Life Events and Cognitive-Personality Characteristics in the Prediction fo Major Depression and Antidepressant Response. American Journal of Psychiatry 2000;157(6):896–903. [PubMed: 10831468]

Messer SC, Angold A, Costello EJ, Loeber R, VanKammen W, Stouthamer-Loeber M. Development of a short questionnaire for use in epidemiological studies of depression in children and adolescents: Factor composition and structure across development. International Journal of Methods in Psychiatric Research Dec;1995 5(4):251–262.

Paykal ES. The evolution of life events research in psychology. Journal of Affective Disorders 2000;62 (2001):141–149.

Pelto PJ, Pelto GH. Studying knowledge, culture, and behavior in applied medical anthropology. Medical Anthropology Quarterly 1997;11(2):147–163. [PubMed: 9186958]

Rohner RP, DeWalt BR, Ness RC. Ethnographer Bias in Cross-Cultural Research: An Empirical Study. Cross-Cultural Research January 1;1973 8(4):275–308. 1973.

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

Romney AK, Weller SC, Batchelder WH. Culture as consensus: A theory of culture and informant accuracy. American Anthropologist 1986;88:313–338.

Schaie K. A general model for the study of developmental problems. Psychological Bulletin 1965;64(2): 92–107. [PubMed: 14320080]

StataCorp. Stata Statistical Software: MP for Windows, Release 10.1. StataCorp LP; College Station, TX: 2008.

Townsend, NW. The Package Deal: Marriage, Work, and Fatherhood in Men's Lives. Temple University Press; Chicago, IL:

Trostle, J. Culture and Epidemiology. Cambridge University Press; Cambridge, UK: 2005.

Westermann R, Spies K, Stahl G, Hesse FW. Relative effectiveness and validity of mood induction procedures: A meta-analysis. European Journal of Social Psychology Jul-Aug;1996 26(4):557–580.

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

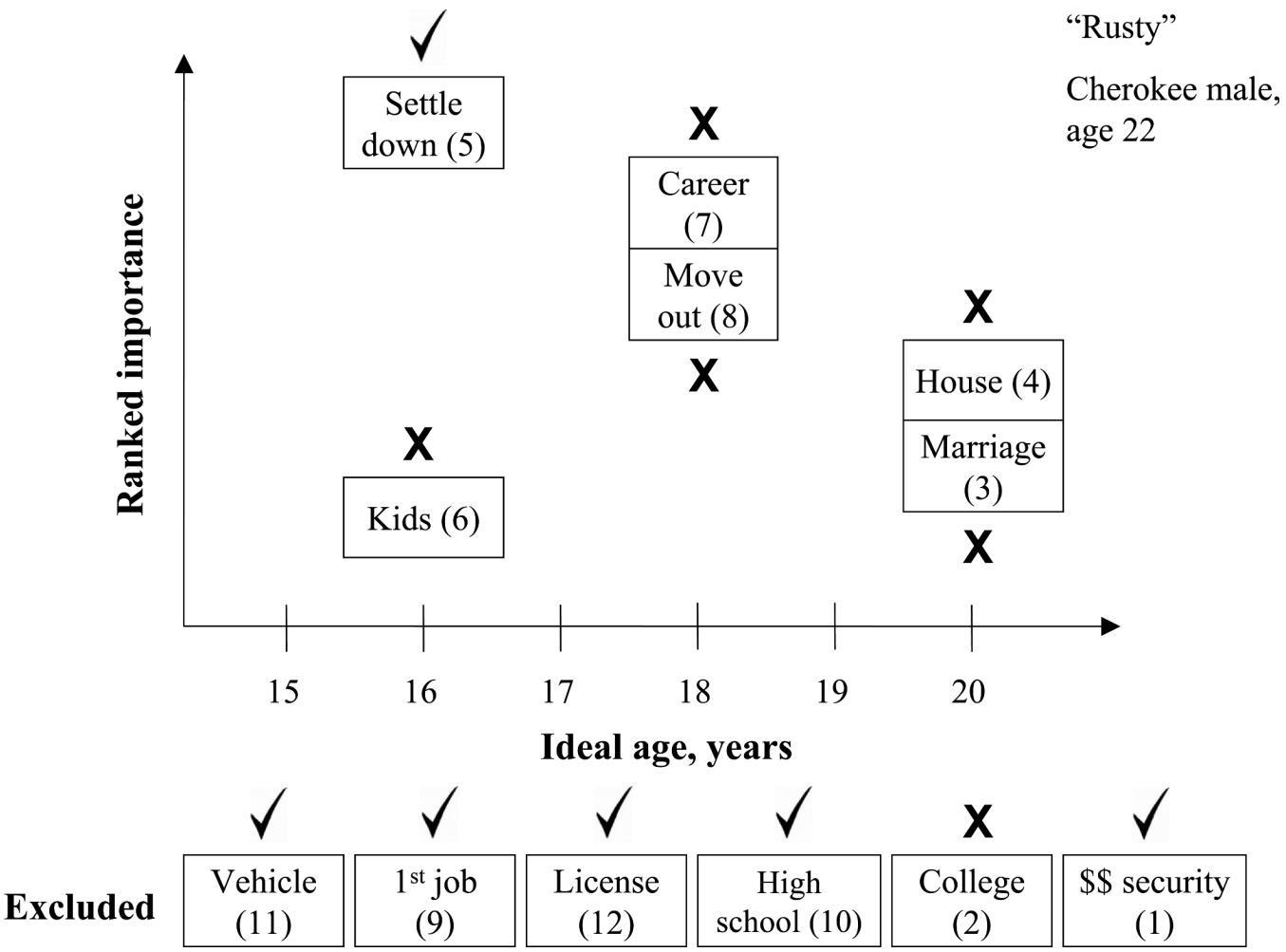

Figure 1.

Note: The items located within the *x* and *y* axes are the milestones Rusty included as "most essential" to achieve in life. Vertically, they are in order of ranked importance. On the *y* axis is Rusty's perceived ideal age for achieving each milestones. In parentheses are the ranked difficulties of achieving each item (1 is hardest, 12 is easiest). Rusty has already achieved the items with a check mark, and has yet to achieve the items with an "X."

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

Table I

Variable means (weighted)

Mean (± SE)	Total	White	Cherokee
MFQ at LTI-Y	2.79 (.29)	2.81 (.31)	2.51 (.24)
Prior MFQ	2.41 (.3)	2.4 (.32)	2.61 (.25)
Age at LTI-Y	21.7 (.16)	21.7 (.18)	21.77 (.13)
Age at prior interview	20.34 (.11)	20.32 (.11)	20.73 (.09)
Sex (% male)	44.1 (4.87)	43.78 (5.2)	48.1 (4.4)
Life events	2.16 (.13)	2.17 (.14)	2.0 (.11)
LTI-Y barriers	16.1 (.71)	15.85 (.75)	19.13 (.91)*
LTI-Y milestones	6.31 (.2)	6.33 (.21)	6.09 (.18)

*Ethnic group difference, $p < .05$

NIH-PA Author Manuscript
NIH-PA Author Manuscript
NIH-PA Author Manuscript

Table II

Pairwise correlations

	MFQ at LTI-Y	Prior MFQ	Life events	LTI-Y barriers	LTI-Y milestones
MFQ at LTI-Y	1				
Prior MFQ	.44***	1			
Life events	.24***	.09†	1		
LTI-Y barriers	.4***	.26***	.26***	1	
LTI-Y milestones	−.13*	−.05	.02	−.2**	1

† $p < .1$

* $p < .05$

** $p < .001$

*** $p < .0001$

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

Table III

Zero-inflated Poisson regressions predicting depressive affect at LTI-Y

	Model 1 (n=319)		**Model 2 (n=319)**	
AIC	**4.06**		**AIC**	**3.92**
Wald Chi^2	**37.23**		**Wald Chi^2**	**88.43**
p	**< .0001**		***p***	**< .0001**
Max. likelihood r^2	**.21**		**Max. likelihood r^2**	**.32**
	RR (95% CI)	***p***	**RR (95% CI)**	***p***
Ethnicity	.93 (.84, 1.04)	.21	.88 (.8, .97)	.009
Age	1.0 (.84, 1.18)	.97	1.06 (.92, 1.23)	.41
Sex	.91 (.78, 1.06)	.23	.86 (.75, .99)	.04
Prior MFQ	1.23 (1.1, 1.38)	<.0001	1.26 (1.15, 1.39)	< .0001
Life events	1.15 (1.01, 1.33)	.04	1.11 (.97, 1.27)	.12
LTI-Y barriers	--	--	1.21 (1.01, 1.46)	.04
LTI-Y milestones	--	--	.81 (.73, .92)	.001