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THE IMPACT OF FUNCTIONAL LOSS: NATURE AND IMPLICATIONS OF LIFE CHANGES

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This study investigated the extent, nature, and implications of life changes related to functional loss. Participants were 53 adults aged 27 to 65 who had experienced vision loss during adulthood. Results demonstrated that positive, negative, and "in-between" types of change occurred across four life domains (goals/priorities, self-views, worldviews, relationships with others) to varying extents. Although negative changes seemed to be more prevalent than positive changes, the majority of changes were in-between changes. Links of occurrence and type of change with well-being were found for the self- and worldview domains. Findings underscore the need to assess different types and aspects of life changes in order to better understand the impact of functional loss in young and middle adulthood.

Research exploring the psychological aftermath of loss and tragedy has primarily focused on negative consequences experienced by individuals (e.g., Collins, Taylor, & Skokan, 1990; Wortman, 2004). These can include distressing emotions, such as fear, anger, and guilt. Other negative consequences include disruption of daily activities and relationships and problems with maintaining purpose or meaning in life (e.g., Janoff-Bulman & Frieze, 1983; Wortman & Silver, 2001). Under severe stress, disagreeable physical reactions may be experienced as well, such as fatigue or muscle tension (Tedeschi & Calhoun, 2004), and, though rare, increased risk for psychiatric disorder (e.g., clinical depression) is sometimes another

negative consequence of surviving loss and tragedy (Rubonis & Bickman, 1991).

Although the bulk of research has addressed negative life changes, there has been an increasing interest in positive life changes in the face of adversity, such as the positive reappraisal of life, an enhanced self-knowledge, reordering of priorities, and a greater emphasis on relationships (e.g., Tedeschi & Calhoun, 2004). Some argue that this recent attention to positive life changes, often called "posttraumatic growth," may have resulted in an overfocus on the positive consequences of loss and trauma (Wortman, 2004). Only a few studies have adequately assessed both the negative and positive effects of experiencing trauma or loss and how the individual's life is changed as a result of the experience (Collins et al., 1990; Lehman, Wortman, & Williams, 1987; Solomon et al., 1999). Nevertheless, it is essential that both negative and positive life changes are assessed so that expectations about the actual prevalence and proportion of each remain accurate. Specifically, Wortman (2004) cautioned that the expectation of positive life change as the result of trauma or loss can unfairly burden those who are suffering and that this may impede the coping process. The purpose of this study was to explore the extent, nature, and implications of both positive and negative life changes in individuals who have been faced with a major life loss: the loss of normal visual functioning during adulthood after having grown up sighted.

Positive and Negative Changes Following Loss

The topic of positive life change following a loss or trauma has been investigated in a number of different contexts, including bereavement (e.g., Edmonds & Hooker, 1992; Hogan, Morse, & Tason, 1996; Lehman et al., 1987), sexual assault (e.g., Burt & Katz, 1987; Draucker, 1992; McMillen, Zuravin, & Rideout, 1995) and chronic illnesses such as cancer (e.g., Collins et. al., 1990; Cordova, Cunningham, Carlson, & Andrykowski, 2001), HIV infection (e.g., Bower, Kemeny, Taylor, & Fahey, 1998; Schwartzberg, 1993), and arthritis (e.g., Tennen, Affleck, Urrows, Higgins, & Mendola, 1992).

Although there is some evidence that stressful life events can bring about positive change or growth in these populations, the question remains exactly how prevalent positive changes are compared to negative changes and how such changes are related to

adjustment. For example, in a study comparing life changes in a group of Israeli ex-POWs with a control group, Solomon and colleagues (1999) found that while both groups reported more positive relative to negative changes, the ex-POWs experienced more negative changes than controls as well as lower functioning and well-being. In line with these findings, Wortman (2004) observed that the presence of positive change in the face of adversity does not necessarily outweigh the negative change and that positive change cannot be automatically equated with better adjustment. Aldwin and Levenson (2004) also noted that positive change is usually tempered with negative change, and that more attention needs to be paid to coping strategies as differential mediators of trauma and stress instead of presuming that positive change is the most common outcome. Thus, it may very well be the case that those who function the best are those who report no change at all or "in-between" type changes (i.e., changes that are not clearly positive or negative).

Another important question is what brings about positive or negative change. The "assumptive worlds perspective" proposed by Janoff-Bulman and colleagues (Janoff-Bulman, 1989; Janoff-Bulman & Frieze, 1983; Janoff-Bulman & Timko, 1986) holds that cognitive assumptions people have about themselves and the world are often shattered by traumatic loss or events, forcing them to alter their personal beliefs about the world and other people. Tedeschi and Calhoun (2004) suggest that this shattering of positive cognitive assumptions is likely to result in growth or positive change due to the cognitive processing and restructuring that is involved in coping with trauma. Conversely, Bramsen and colleagues (2002) used the notion of shattered cognitive assumptions to explain negative change in survivors of war, arguing that because traumatic events force survivors to alter their personal theories of the world and themselves, these individuals become more vulnerable to distressing emotional states and posttraumatic stress disorder symptomatology.

Thus, in some cases, the shattering of cognitive assumptions may be a component of positive change; in other cases, it may result in negative change. In addition, there may be other factors that contribute to positive change. For example, Wortman (2004) notes that it may be the threat to mortality, as found in studies with cancer patients (Cordova et al., 2001; Wortman & Dunkel-Schetter,

1979) and survivors of natural disasters (McMillen et al., 1997), that facilitates personal growth. Wortman also suggests that personal growth may be most prevalent when people perform well in situations requiring new coping skills, citing a study conducted by Carr (2002) that found that widowed women showed personal growth because they were placed in new situations and engaged in tasks that enhanced their feelings of competence and personal strength. Hence, the shattering of cognitive assumptions about life may not be a necessary component of personal growth.

The notion that positive change may result from situations that require certain kinds of coping guided a study with cancer patients conducted by Collins and colleagues (1990), one of the few studies to assess positive and negative change together in different life domains. They argued that life domains that capture a broad range of beliefs about the world and one's role in it are views of the self, views of the world, goals/priorities, and relationships with others and that prior to a trauma or loss, most people hold positive beliefs across these four life domains. It was predicted that worldviews were most likely to change in a negative way, goals and relationships would become more positive, and self-views were likely to change both positively and negatively. The authors indeed found these patterns in their sample of cancer patients, noting that there were more positive worldview changes than expected; nevertheless, these changes remained more negative compared to the other domains, as expected. These findings supported the prediction that different types of change are likely for different life domains and that it may be hard to ignore negative changes when a person is faced with ongoing adversity.

Vision Loss During Adulthood

Vision impairment is an example of loss where people do not face mortality, but instead face an ongoing negative event where the challenge or adversity is a functional loss causing major limitations. In addition, vision-related disability involves the kind of adversity that allows for efforts to actively adjust, cope, and engage in tasks that enhance feelings of competence and personal strength. Similar to other declines and losses, adaptation to vision loss has been conceptualized as a process of adjusting one's self, values, and life goals to include the realistic limits that are imposed by the

impairment (Moore, 1984). This process can constitute a major challenge, especially after a lifetime of being sighted (Brennan & Silverstone, 2000).

Vision impairment due to eye disease constitutes a common disability that has been found to significantly affect people's daily functioning (LaPlante & Carlson, 1996), social relationships (e.g., Boerner & Reinhardt, 2003; Boerner & Cimarolli, 2005), and quality of life (Adrian, Miller, & de L'Aune, 1982; Karlsson, 1998; Cox, Kiernan, Schroeder, & Cowley, 1998; Szlyk, Becker, Fishman, & Seipler, 2000). It is also often progressive in nature and irreversible (Faye, 1984). Most research on the implications of vision loss has been limited to the elderly population. In contrast, little is known about how younger adults deal with such a disability. However, recent evidence shows that the risk for subsequent mental health problems tends to be higher for younger (i.e., working-age) adults compared to older adults (Boerner, 2004). This may be due to the untimely occurrence of a disability at a younger age. Also, the disability is likely to interfere with the pursuit of life goals common during this point of adult life (e.g., career goals, supporting a family), which can result in a significant interruption of the daily routine and emotional distress (Nurmi, 1992; Wheeler, Munz, & Jain, 1990). Evidence from one study showed that vision impairment interfered the most with functional and relationship goals and the least with life philosophy/religion goals (Boerner & Cimarolli, 2005). This suggests that more changes may be expected in some life domains than in others.

Furthermore, while the major disruption that vision loss can cause in the lives of working-age adults, as well as its untimely occurrence, seems to make negative changes in response to vision loss likely, one could also argue that younger people may have more resources, fewer additional losses and limitations, and, overall, more options and capacities for positive change. This means that both significant positive and negative changes seem likely in this population. However, since so little is known about this population, the content and extent of change, as well as the proportion of positive and negative change, need to be explored in order to capture vision loss' full impact. There is also a need to look at different dimensions of potential change. Thus, the present study examined the extent, nature, and implications of life changes in goals/priorities, self-views, worldviews, and relationships with

others in a thus far understudied population; working-age adults with vision loss and related functional disability.

Predictions and Research Questions

Based on the existing literature, three predictions were made for the present study. Because vision loss causes such disruption in the lives of working-age adults, we predicted that there will be more instances of change than instances of no change across the four life domains. We also expected that that there will be more change in the goals/priorities, self-views, and relationships with others domains than there will be in the worldviews domain. Lastly, we predicted that there will be evidence for both positive and negative change across the domains as per Wortman's (2004) argument, as opposed to the emphasis on positive change and personal growth that has dominated the literature in recent years.

In addition to these predictions, four additional research questions were addressed. We were interested in the prevalence of different kinds of changes in each domain in the population of working-age adults with vision impairments. We also paid special attention to exploring the nature of the changes, specifically which facets of change (e.g., drastic shift or modification of certain aspects) would emerge in the different domains. Another question of interest was whether or not the proportion of positive and negative changes differs across the four domains; for example, it may be that there are more negative changes in participants' worldviews because their assumptions of the world have been shattered. Lastly, we were interested in whether or not participants' wellbeing would be related to the type of change experienced or to whether or not there was a change. In other words, are people who report positive changes likely to be doing better? Or is it that those who report no change or change that is neither clearly positive nor negative do better?

Method

Participants

Participants for this cross-sectional study were recruited from a pool of 126 adults with vision impairment between the ages of

22 and 65 who had been first-time applicants at a vision rehabili-
tation agency serving the greater New York metropolitan area.
All participants were experiencing significant visual impairment
and had their cases closed at the agency prior to contact. Other
criteria for inclusion were as follows: age of onset of vision impair-
ment 18 years or older, community dwelling, fluency in English,
and absence of cognitive or hearing deficits that could interfere
with the telephone interview. Thirty-four of the 126 individuals
contacted could not be reached even after numerous attempts,
12 were not English speakers, 2 were cognitively impaired, 53 par-
ticipated in the interview, and 25 declined participation, resulting
in a response rate of 68% (based on those participating and those
refusing). Data were collected by trained interviewers through tele-
phone interviews lasting approximately 30 minutes. Of the 53
participants aged 27 to 65 ($M = 52$, $SD = 10.3$), 57% ($n = 30$)
were women, and of the 51 who reported their race/ethnicity,
59% were White ($n = 30$), 29% were African American
($n = 15$), 8% were Hispanic ($n = 4$), and 4% were of other races
($n = 2$). As determined with the Functional Vision Screening
Questionnaire (Horowitz, Teresi, & Cassels, 1991), a 15-item index
used to indicate whether or not difficulty is experienced in specific
functional areas (e.g., reading newspaper print or recognizing faces
across a room), participants reported an average of 11–12 func-
tional difficulties (potential range: 0 to 15; $M = 11.9$, $SD = 2.7$).

Measures

The interview included questions on basic sample characteristics
(e.g., age, income adequacy, race/ethnicity, and vision loss sever-
ity). The core of the interview comprised collection of narrative
information about participants' changes in goals and priorities,
self-views, worldviews, and relationships with others, assessed with
four modified questions based on the five questions used by Collins
and colleagues (1990). The modified question regarding goals and
priorities combined two questions from Collins and colleagues
that dealt with priorities and daily activities along with plans and
goals for the future. The remaining three questions used the same
terminology as Collins and colleagues. Participants were read the
following instructions: "Some people who are confronted with a
vision impairment experience changes in their goals and priorities,

their views about the world, themselves, and other people. The next questions are about how your vision impairment has affected you in these ways." The first question posed to participants was "In what ways, if any, has having a vision impairment changed your goals and priorities?" Questions 2 and 3 were identical in form and asked about changes in self-views and worldviews. Question 4 was formulated as "How has having a vision impairment changed the ways in which you relate to others?" Interviewers recorded data in a typed document as accurately as possible for later coding.

Depression was measured with the 10-item Center for Epidemiological Studies Depression Scale (CES-D; Kohout et al., 1993), a short version of the widely used original 20-item CES-D (Radloff, 1977). Participants indicate whether (1) or not (0) they have experienced 10 different symptoms of depression over the past week. The potential range of the scale is 0 to 10. Actual scores ranged from 0 to 9 ($M = 3.6$, $SD = 2.6$); the Cronbach's alpha was .78.

Life satisfaction was assessed with the 5-item Satisfaction with Life Scale (SWLS; Pavot & Diener, 1993). The SWLS is designed to assess a person's global judgment of life satisfaction. Participants are asked to rate their agreement/disagreement regarding statements concerning their life circumstances on a 5 point scale (1 = *strongly disagree*, 5 = *strongly agree*). Sample items are "The conditions of my life are excellent" and "So far I have gotten the important things I want in life." Life satisfaction scores on the scale can range from 5 to 25. Actual scores ranged from 6 to 25 ($M = 14.7$, $SD = 5.8$), and the Cronbach's alpha for the scale was .82.

Analysis Plan

The first stage of the data analysis entailed the development of a coding system for the four open-ended questions regarding change in goals/priorities, self-views, worldviews, and relating to others. The authors reviewed the narrative responses of the first five participants, generating initial sets of codes to indicate whether or not there was change and to categorize the nature of change. The latter seemed to be characterized by three different aspects: type of change (e.g., positive or negative), content of change (e.g., change in career or in self-worth), and facet of change (e.g., drastic shift or modification of certain aspects).

TABLE 1 Frequencies and Percentages for Extent, Type, and Facet of Life Change in Each Domain

	Goals/ priorities		Self- views		World views		Relationships with others	
	No.	%	No.	%	No.	%	No.	%
Change (yes)	40	76	40	76	21	40	43	81
Type of change								
Clearly positive	6	15	6	15	3	14	6	14
Clearly negative	10	25	15	38	11	52	20	47
In–between	24	60	19	48	7	33	17	40
Facet of change								
Drastic shift	9	23	5	13	2	10	3	7
Modification of certain aspects	22	55	25	63	4	19	35	81
Addition of new aspects	0	0	0	0	13	62	0	0
Loss of old aspects	9	23	10	25	2	10	5	12

It should be noted that in terms of the type of change in each domain, positive or negative change codes were only assigned when the narrative as conveyed by the participant indicated clearly positive or clearly negative changes. In addition, an "in-between" code was created to reflect changes that were clearly neutral or changes that were described as mixed in terms of valence (see Table 1).

The content codes (see Table 2) were based on common themes that emerged from the narratives. In some cases, these themes had a clear direction (e.g., feeling more vulnerable or placing less importance on appearance/material things), whereas in others they tended to be merely described as change (e.g., change in career or leisure).

With respect to facets of change (see Table 3 for sample quotes for each code by domain), a drastic shift code was assigned when the participant described drastic general development in the form of change from the former goal to the present goal. In contrast, the modification of certain aspects code was assigned when changes in certain aspects, rather than an overall change, occurred. The addition of new aspects code was assigned when a person referred to newly added aspects without mentioning the loss of previous aspects, and conversely, the loss of old aspects code was

TABLE 2 Frequencies and Percentages of Content Codes for Life Changes in Each Domain

Goals/priorities			Self-views			Worldviews			Relationships with others		
Content codes	No.	%	Content codes	No.	%	Content codes	No.	%	Content codes	No.	%
Change in career	23	58	Realize loss of independence	19	48	Realize people's ignorance	9	43	More dependent on others	20	47
Change in leisure	15	38	Diminished self-worth	19	48	World is cruel/unfair/dangerous	7	33	Less socialization with others	15	35
Higher priority on vision-related health	9	23	Learn to accept vision problem	9	23	More compassionate/aware worldview	4	19	Appreciate more/better understand others	11	26
Basic functioning/self-preservation more important	8	20	Appreciate life more	8	20	Realize good in people	4	19	Reestablish ways of communicating with people	11	26
Material things/appearance less important	8	20	Feel more vulnerable	8	20	Disconnect from/disinterest in world	4	19	More strained responses to others	6	14
Higher priority on family life	7	18	Realize inner strength	7	18						
Focus on learning ways to adjust	5	13	Increased self-worth	5	13						
Focus on helping others	4	10	More compassionate / sensitive	4	10						

TABLE 3 Sample Quotes for Facets of Change by Domain

Domain/facet	Goals/priorities	Self-views	Worldviews	Relationships with others
Drastic shift	"Well, I would say it completely changed my career goals. . . . my vision impairment has really changed my ideas of what I want to do. . . . Before I lost my vision, my career was a monetary concern, but that is no longer important to me now. Now I'm more concerned about doing something of service to people."	"It's totally changed me. . . . before when I was a trial attorney, I was a hard and rough person. . . . But at this point, I'm totally different. I'm extremely sensitive to other people, and sensitive to any type of a problem anyone might have. Now, I look to find the root of the problem as opposed to the surface, like a criminal act."	"Sure it changed my views of the world. Can't do the things I want to do. You have to see it differently. Every way possible—it's different. I viewed the world as a place that you could make it. Now it's different; I don't know what will happen next."	"I think I've really come to appreciate how much trouble other people have. You think you're bad off. . . but the other person is much worse. It made me more sympathetic toward others with worse problems. Before, I didn't think of that. Now I appreciate it. If I see someone bent over walking in the street, I try to sympathize with them and hold the door for them."
Modification of certain aspects	"I had my master's in school administration for a principal, and no matter what anybody says about equal opportunities, no one wants a blind principal. My goals have changed. I can be a guidance counselor, and if that doesn't work, I'll go back to school for a PhD in psychology. My daughter and my marriage are still a priority."	"I was the powerhouse of the family before. I was a single mom for 20-something years. And now I feel weaker. But I am still here. I'm still a mom, and I can still give advice. Things have changed a little bit, but I can still stay myself."	"Well, the world I always knew to be rough and kind of bitter. But then there are times of pleasant situations where people are willing to help. It's more noticeable now, how rough the world can be because of my vision problem. But all in all, nothing else has changed."	"Sometimes I become very apologetic because I don't see. Sometimes I do get a little hostile about people being inconsiderate in the street. So it goes two ways—sometimes I'm more apologetic and timid, and sometimes I'll be more hostile with people who are ignorant. I used to be more balanced with people before."

(Continued)

TABLE 3 Continued

Domain/facet	Goals/priorities	Self-views	Worldviews	Relationships with others
Addition of new aspects	—	—	"I've learned that the world is a very cruel place for anybody who has any kind of impairment. People see my glasses and they automatically think I'm stupid. There are lots of people who will take advantage of you. It makes me very angry. The world is a cruel and unfair place, especially for disabled people."	—
Loss of old aspects	"Because of my blindness, I feel that the things I was able to do I am no longer able to do. So the goals that I have are gone now. I can't do those things anymore. Those goals are no longer important because of my disability. I just have to learn to accept that I can't do certain things anymore."	"I always used to look perfect and now I don't. I can't stand the way I look right now. Before the vision impairment, I felt that I was good. I used to work at flea markets, take care of the household, and do a big job. Now I feel useless. I see myself as useless."	"I just don't think much of it. I used to enjoy reading the paper and reading about the world—I really enjoyed that. Now I don't read about it, so I don't hear about it too much anymore. I've lost interest in the world because of that."	"When lots of people are talking, you can't keep up. If someone passes me by, says how you doing, I don't realize they are on the cell phone. People think you are nuts. You withdraw, you stay to yourself—you do a lot more listening and try to keep yourself occupied."

assigned when a person described losing old aspects of life without describing anything new in place to replace what was lost.

After the authors agreed on the initial set of codes and clarified their definitions, the narratives of the next five participants were used to establish interrater agreement between two independent coders. The interrater agreement for this first round of coding was close to 60% across the four domains. On the basis of this first round, the coding rules were further refined. The remaining rounds of coding all produced average interrater agreements of at least 80%.

Next, descriptive analyses were conducted to identify the frequencies and percentages of each change code that emerged during the narrative coding. In a final step, nonparametric tests (i.e., Kruskal-Wallis and Mann-Whitney tests) were used to examine the relationships of different types of change (positive, negative,

TABLE 4 Group Differences for Type of Change/No Change With Regard to Well-Being Outcomes by Domain

Type of change	Depressive symptoms				Life satisfaction			
	N	Mean rank	χ^2	p	N	Mean rank	χ^2	p
Goals/priorities								
Clearly positive	6	29.83	0.52	.914	6	32.42	4.23	.237
Clearly negative	10	27.80			10	19.90		
In between	24	25.79			24	30.08		
No change	12	25.17			13	24.27		
Self-views								
Clearly positive	6	15.33	4.46	.216	6	33.42	13.04	.005
Clearly negative	14	30.11			15	15.53		
In between	19	28.16			19	28.55		
No change	13	25.35			13	35.00		
Worldviews								
Clearly positive	3	8.17	9.21	.027	3	41.67	12.72	.005
Clearly negative	11	35.77			11	19.27		
In between	7	22.86			7	42.07		
No change	31	25.81			32	24.98		
Relationships with others								
Clearly positive	6	32.42	4.23	.237	6	35.67	2.24	.525
Clearly negative	10	19.90			20	25.55		
In between	24	30.08			17	25.50		
No change	13	24.27			10	27.25		

or in–between) and no change with two indicators of well-being (depressive symptomatology and life satisfaction; Table 4). Thus, the predictions and the first three research questions regarding negative and positive changes across the domains were addressed descriptively. The fourth research question regarding whether or not well-being is related to type of change was addressed with the nonparametric tests.

Results

As expected, in regard to the prevalence and proportion of reported to no change occurrence, overall, there was more reported change than no change (see Table 1). Thirty-four participants (64%) reported change in at least one domain, 32 (60%) reported change in at least two domains, 15 (28%) reported change in all domains, and only 4 people (8%) reported no change in any of the domains. Regarding the proposition that there will be more changes in goals/priorities, self-views, and relationships domains than in the worldviews domain, it was found that, indeed, changes in worldviews were in the minority (40%), as compared to reported changes in goals/priorities (76%), self-views (76%), and relationships (81%).

One particular interest of the study was the actual content of the changes found in each domain that are prevalent in the population of working-age adults with vision impairment (see Table 2). The most frequently reported changes in the goals/priorities domain were a change in career (58%) and a change in leisure activities (38%). In the self-views domain, the most frequently reported changes were realization of one's loss of independence (48%) and sense of diminished self-worth and confidence (48%). For the worldviews domain, realization of people's ignorance of life with a disability (43%) and realization that the world is a cruel, unfair, and dangerous place (33%) were the most frequently reported changes. Lastly, in the relationships with others domain, participants reported being more dependent on others (47%) most frequently, followed by less socialization or a decreased interest in socializing with others (35%).

Another point of interest was what facets of change would emerge in the different domains. Across all domains, modification of certain aspects was reported the most often ($n = 86$), followed

by a loss of old aspects ($n = 26$), a drastic shift ($n = 19$), and an addition of new aspects ($n = 13$). Between the domains, modification of certain aspects was most frequent for all domains except for the worldviews domain, for which an addition of new aspects was the most frequent facet of change. Interestingly, the worldviews domain was also the only domain in which the addition of new aspects facet emerged. The facets of change mostly emerged in a mixed pattern across all domains; among those who reported change, 14 participants reported all changes as a modification of certain aspects across all domains, 4 reported a loss of old aspects only, and 1 person reported only drastic shifts. While modification of certain aspects was the most common facet of change, with 22 participants reporting this facet on average across the domains, about an average of 5 participants reported drastic shifts and about 7 reported a loss of old aspects (averaged across domains).

In terms of types of change, it was found, as expected, that both positive and negative types of changes occurred in all four domains (see Table 1). However, there was also evidence for the in–between type of change. With respect to the proportion of positive and negative changes across the four domains, negative change seemed to be generally more prevalent than positive change; while negative change in worldviews and relationships appeared over three times more often than positive change, negative change in self-views occurred twice as often as positive change, with the smallest difference in negative and positive change found in the goals/priorities domain (6 to 10). In addition, just 1 person reported only positive change across all domains; another 3 participants reported positive change in at least two domains. In contrast, 12 participants reported only negative change across all domains, and another 14 reported negative change in at least two domains. In the goals/priorities domain, participants most often reported changes to be in between, meaning "just different" and not clearly positive or negative, whereas for the self-views, worldviews, and relationships domains, frequencies for the in-between changes fell in the same ballpark as reported negative changes.

Lastly, the present study investigated how people's well-being was related to occurrence and type of change. Specifically, it was of interest who would be doing better: those who report no change or in-between change (that is, neither clearly positive nor negative

change), or those who report positive change. The results of the Kruskal-Wallis test showed that relationships to well-being outcomes differed by domain and well-being indicator. With regard to depressive symptoms, there was only one significant difference among the type of change/no change groups for type of change in the worldview domain ($\chi^2_{\text{K-W}} = 9.21$, $p = .03$). With respect to life satisfaction, significant differences among the groups emerged for the self-view ($\chi^2_{\text{K-W}} = 13.04$, $p = .005$) and worldview domains ($\chi^2_{\text{K-W}} = 12.72$, $p = .005$). There were no significant group effects for either outcome in the goals/priorities and relationships domains. The mean ranks depicted in Table 4 suggest that negative change in self-views and worldviews was related to poorer well-being. At the same time, they indicate that those who reported positive change did not necessarily do better than those who reported no change or in-between change.

Post hoc analyses (Mann-Whitney tests) comparing positive change versus no change showed significant differences only for depressive symptoms in the worldviews domain (fewer depressive symptoms for those who reported positive change; $p = .03$) and showed a similar but marginally significant finding for life satisfaction ($p = .07$). In addition, a post hoc comparison between positive and negative changes indicated that those who reported positive change in self-views scored significantly higher in life satisfaction ($p = .02$) and lower in depressive symptoms (marginally significant; $p = .06$). Significant differences were also found between these groups in depressive symptoms and life satisfaction in the worldviews domain ($p = .02$ and $p = .04$, respectively).

Discussion

This study examined the extent, nature, and implications of life changes in goals/priorities, self-views, worldviews, and relationships with others in working-age adults with vision loss and related disability. Findings supported the expectation of change across all domains in our study population, underscoring the significant and extensive impact of vision loss in the lives of working-age adults and the need for future study to further investigate vision loss and its impact. Our findings are consistent with prior research on life changes following adversity regarding the content of reported change, but also add some important components that seem to be

particularly relevant for a disabled population, such as the increased importance given to basic functioning and self-preservation and the realization of people's ignorance of disabilities. These insights help us to understand the impact and particular difficulties of life change associated with coping with a chronic disability such as vision loss.

Exploration of facets of change is another way of illustrating the nature and significance of reported change in our population. Although modification of certain aspects was the most common facet of change, a sizable minority reported a drastic shift and a loss of aspects as well. Thus, even though for most people change seemed to involve more of a gradual adjusting of individual aspects while retaining some degree of overall continuity, changes were certainly characterized as more drastic for some. In addition, the most common facet of change in the worldview domain was an addition of new aspects, a facet that did not emerge in any of the other domains. This suggests that having vision loss does not eradicate worldviews held prior to having vision loss; rather, the experience of having vision loss puts individuals in a situation where they are more likely to discover new aspects of the world that they did not know existed. The lack of the addition of new aspects facet in all other domains suggests that in those domains, individuals are more able to alter what their previous conceptions were, perhaps because goals/priorities, self-views, and relationships are more closely related to daily experiences as opposed to overarching views of the world. These findings underscore the need for future research to look at the process of change, which is best done longitudinally, to better understand the nuances and patterns of change and their impact on well-being outcomes.

Tedeschi and Calhoun (2004) implied that although growth and distress can coexist, positive changes predominate over negative changes, or as they put it, "out of loss there is gain" (p. 19). Wortman (2004) questioned this notion and concluded that it is necessary to consider the impact of negative changes alongside positive changes; as she puts it, most people are diminished, not enhanced, by tragedy (also see Collins et al., 1990). Our data support the notion that both positive and negative changes occur. However, in contrast to Collins and colleagues (1990), we found that the majority of changes were in-between changes, as opposed to no change at all, and we found more negative than positive

changes, as opposed to more positive changes. Our findings may differ because the nature of the diseases and subsequent implications are different; as Collins and colleagues (1990) noted, more negative changes are likely to occur in situations of ongoing adversity. Cancer patients face mortality, which may be something that triggers positive reappraisal type thoughts. In addition, if they go into remission, they may have a chance for recovery, which is not the case with many of the eye diseases common in adulthood that are often irreversible in nature. Cancer patients may not necessarily deal with the same degree of functional disability as persons with eye diseases do, and also may not experience the discrimination that disabled people often face, such as being perceived as less intelligent and/or stand-offish and being easy to take advantage of. Many people with vision loss face this condition for life, with the prospect of their vision getting progressively worse over time; this is a much different situation than people dealing with other traumas and losses, such as natural disasters and bereavement, which tend to be one-time events.

We also found that reported change was in the majority in the goals/priorities, self-views, and relationships domains, while change was less common in the worldviews domain. This suggests that the worldviews domain is less open to change than the other domains, which may be a reflection of the makeup of our study population. The mean age of the participants ($M = 52$ years) was at the higher end of our working-age criteria (22 to 65 years old); it may be the case that a younger population would experience more change since they are still developing their worldviews, whereas a more middle-aged population may not experience as much change since their worldviews may be relatively ingrained.

In contrast to Collins et al. (1990), we did not find more positive changes in goals/priorities and relationships than in self-views and worldviews; rather, the prevalence of positive change was equal across all domains. However, in the worldviews and relationships domains, negative change was the most reported type of change. Because all change reported in the worldviews domain emerged as the addition of new aspects facet, it seems that the minority of participants who experienced change in their worldviews were mostly experiencing negative discoveries about the world due to their vision loss; future study is needed to explore whether or not this finding is exclusive either to people with disabilities in

general or to people with vision-related disability. The prevalence of negative change in the relationships domain may be due to the particular ways in which relationships are affected by individuals not having the visual information needed to communicate, as well as being increasingly dependent in relationships.

The reported changes in the goals/priorities and self-views domains comprised mostly in-between change, which was not the case in the worldviews and relationships domains; this may be because there are more personal options for influencing one's goals/priorities and self-views, whereas worldviews and relationships are influenced more by others or external conditions. Because one has more control over one's goals/priorities and self-views, the chances of having a smoother adjustment in those domains might be higher than in the worldviews and relationships domains, which are more dependent on external conditions.

Regarding which group (i.e., positive, negative, in between, or no change) was doing better in terms of well-being, we found that relationships to well-being outcomes differed by domain and well-being indicator (life satisfaction or depressive symptoms). More significant differences appeared for life satisfaction than depressive symptoms, perhaps because life satisfaction is a more overarching indicator of well-being than depression, which is more affectively based and clinical in nature. Specifically, significant differences were found among the groups for life satisfaction in the self-views and worldviews domains and for depressive symptoms in the worldviews domain only. Perhaps significant differences were found in the self- and worldviews domains, and not the goals/priorities and relationships domains, because self-views and worldviews reflect more of the core of individuals' personal beliefs about themselves and what to expect in life. The links between worldviews and both life satisfaction and depressive symptoms may indicate that worldviews play an especially critical role for well-being, or simply that those who are more distressed are more likely to see their worldviews as being affected by vision loss. This dynamic could best be clarified with longitudinal data. Finally, our finding that persons who experience positive change (as opposed to in-between, negative, or no change) do not consistently report better well-being supports Wortman's (2004) notion that the implications and consequences of reported positive change need to be better understood and investigated.

Several limitations of the study need to be acknowledged. The study was cross sectional in nature, with a relatively small sample size that limited us to mostly descriptive analytical methods. In terms of sampling, although an effort was made to recruit both young and middle-aged adults, most of our participants ended up being middle-aged. Future studies should use samples that are stratified by age to ensure a more equal distribution in spite of the higher prevalence of vision impairment in middle-aged compared to younger adults. Furthermore, the study used retrospective rather than prospective and longitudinal assessments to garner data on life changes; however, retrospective assessments can still provide valuable pilot data on this issue on which future research can be built. Thus, further research is needed to expand upon the present findings with a larger scale study that includes longitudinal assessments.

In conclusion, our findings confirm Wortman's (2004) supposition that both positive and negative changes need to be assessed in understanding life change and its effects on people. In this context, assessment strategies that seem particularly useful are ones that determine how people actually judge changes for themselves and interpret them in their own lives; attention then needs to be paid to how these people are doing depending on the type of life change that they are experiencing. Finally, clinicians and support providers need to ensure that their expectations about life changes that may be experienced due to trauma or loss are evidence–based, in order to provide appropriate and adequate support.

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