Resistant to Change

Stability of Cognitive Affective Social State during life challenge supports a constructionist model of personal identity

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Abstract:

A 2002-2003 longitudinal study of crew of a yacht competing in the Round the World Clipper Race observed participant self-identity through two tests. The first, through changes over the course of the race of individual's projected Cognitive Affective Social state, from here on 'CAS state'. Second, through the individual's projection of the CAS state of the crew culture around them. Both individual 'CAS state' and crew culture CAS state were measured by a biased heuristic assessment called PEP (Personal Ecology Profile). The results indicated that over the course of the race, after an initial turbulence, individual CAS state settled and remained largely unchanged throughout the experience. Results also indicated that individuals projected the crew culture as a mirror of their individual CAS state, suggesting that individuals have a strong tendency to shape their environment to cohere with their personal state of affect. Implications from these results for a constructionist model of identity formation are discussed.

Introduction

A literature around social constructionism has emerged strongly in the second half of the 20th century (Adams-Webber, Kelly 1979). Social constructionism recognises the contributions of the interactionism of Bandura (Cooper 1991) and the existentialism of Frankl (Frankl 1962) in its formation of its central thesis which can be stated that we participate in co-creating the universe that we experience and the realities to which we respond (Mahoney 1991). Whilst interactionism espouses a holistic approach to entities, people and their environment (Walsh et al. 1992) constructionism goes further in its ontological assumptions of identity formation.

In radical social constructionism personality as such ceases to exist. Gergen (1991) points out "Since there is no essential me one can be anything at any time as long as the roles, setting and costumes have been commodiously arranged" (Gergen 1991). Such anti-essentialism need not necessarily, however, destroy the self as a real entity. Narrative psychological models describe the self as *real* but constructed through *narrative* rather than essentialist terms (Sarbin 1986b). One version of narrative account of identity asserts that a person 'becomes' in every context in which they are present (McFadyen 1990). This emergent identity becomes rooted in a *personal tradition*, the narrative of which is woven to become the historical fabric of a person, and express both historical continuity, coherence and objective reality. A person is real in that they tell a real story with a beginning and an end in space and time.

In such a notion, identity may express itself through the adoption, iteration and embedding of a habitual set of strategies to project oneself in the world (Sarbin 1986). An individual needs to continually maintain this nexus of strategies in order to project and assert a consistent self-identity. This would lead to a notion of identity as open and yet committed; such strategies are open to revision and yet deeply committed as a strategy for habitual self-identity and self-agency.

A test of this notion would be an individual's resistance to change their self- strategies in the face of both opportunity and pressure to change them.

Methodology

Research was carried out with the yacht crew participating in the 2002 Clipper Race. The race entailed an 11 month round-the-world sailing race by competing boats crewed by amateur sailors. A stable core crew sails the entire race, whilst additional crew members will join for one or several legs of the race. A professional sailor skippers each boat.

CAS state measurement was used as a mediating measure of an individual's self-strategies. CAS state is conjectured to be a modulatable state of mind which represents the current state of engagement of an individual to their environment. As such, an individual's CAS present state may be influenced by both environmental and intrinsic factors. Repeated CAS state measurement within different contexts and over a period of time can provide a mechanisms of tracking changes in CAS state.

The tool used to measure 'CAS state' throughout the race was called the Personal Ecology Profile (PEP). The CAS state assessment involves an online computer-based imagination activity. Through a set of audible, recorded instructions, the candidate is asked to imagine a mental image of the characteristics of an unprescribed open space. Rules developed by Grove (Grove, Panzer 1989) governing the use of instructional clean language when leading candidates in mental imagery ensure the candidate's imagination provides a prescription of the open space. Explicit goals in the mental task are not specified ensuring heuristic framing effects are also minimised.

Following the initial imagination of the mental space, the candidate is asked to react to a series of 68 statements describing an event, incident or required task imagined to take place within their mental space. None of the

events require technical skill or involve cognitive difficulty. Each task response is self-scored on a six point Likert scale relating to seven latent factors of their landscape (Figure 1).

Factor	Factor name	Factor biases			
	Trust of own ideas, opinions	*Questionning of own ideas etc….*	⬅➡	*Trust of own ideas etc..*	*Affective factors*
	Trust of others' ideas etc...	*Questionning of other's ideas etc….*	⬅➡	*Trust of other's ideas etc…*	
	Embracing change	*Resisting change*	⬅➡	*Embracing change*	*Social factors*
	Self-disclosure	*Holding back ideas, opinions etc…*	⬅➡	*Disclosing ideas, opinions etc…*	
	Perspective	*Detached perspective when thinking*	⬅➡	*Personal perspective when thinking*	*Cognitive factors*
	Processing	*Connecting ideas when thinking*	⬅➡	*Sequencing ideas when thinking*	
	Planning	*Focusing on the process/ experience*	⬅➡	*Focusing on the outcome*	

Figure 1 illustrating the biased polarities for each of the seven factors.

Each factor is a bipolar construct in which the poles represent a heuristic biased state. For example, Factor 1. is a scale between the two poles of *trusting of own ideas, qualities and opinions* and *questionning of own ideas, qualities and opinions*. A factor score toward trust indicates a heuristic bias to trust one's own ideas, opinions and qualities rather than question them; the extremity of the factor score represents the degree of heuristic bias manifest. Factor scores are computed from raw item scores via a transformational algorithm and standardised on a 1-10 scale.

Individual CAS state measurement

A first aim of the research was to assess changes in CAS state in core crew members over the course the race. The purpose of this was to explore the degree of change in each person's CAS state through the experience. There was no prior hypothesis about what kind of changes could be expected.

The work was carried out over the 11 month period between October 2002 and September 2002 and involved, primarily, the repeated use of the PEP questionnaire, on an individual basis. Each core crew member completed the PEP profile at least four times over the course of the eleven months; at the start, middle and end. The data from this was used to chart CAS state change over the 11 month race.

Crew CAS state

A second aim of the research was to measure the projected crew-culture that had developed in the boat over the race. This was to be achieved by comparing the CAS states of each individual in the core crew with their projection of what the CAS state of the crew of the boat, as a group. This data was considered useful in assessing how difficult a task it is to create a shared 'group culture' and what some of the obstacles are.

At the last major stop in New York, the crew were asked to create a second landscape. This second landscape was a 'crew landscape'. The PEP questionnaire had been amended so that, whilst the statements were the same in form, candidates were asked to create a landscape that they felt would reflect the needs of the crew as a whole; their landscape was scored against the same 68 items. In this way, the 'crew PEP' enabled each crew member to represent the CAS state they believed the crew would inhabit all things being equal; a personal

perception of the CAS state biases of the crew as an entity. Each member of the core crew completed this exercise and nine different 'crew landscapes' and their scores were collected.

Combinative bias patterns

The PEP analysis of an individual's CAS can be plotted against a profile map of sixteen different possible patterns. The sixteen patterns represent the possible combinations of the four major bi-polar traits, each pole representing a bias toward that state (Figure 2). An individual will score somewhere along the scale between the two poles. Extreme scores to one end or other are termed 'polar scores' and indicate a marked bias this way; moderate scores are termed 'pivotal' and indicate a moderate bias; equal scores are termed 'equal' and indicate a neutral CAS state for that CAS factor.

Factor	Factor name	Factor biases		
	Trust of own ideas, opinions	*Questionning of own ideas etc…. (Q)*	⬌	*Trust of own ideas etc.. (T)*
	Embracing change	*Resisting change (C)*	⬌	*Embracing change (X)*
	Self-disclosure	*Holding back ideas, opinions etc…(R)*	⬌	*Disclosing ideas, opinions etc…(P)*
	Perspective	*Detached perspective when thinking (V)*	⬌	*Personal perspective when thinking (M)*

Figure 2. The lexicon of bias abbreviations for the four major factors

There are then sixteen different possible bias combinations of these four major CAS factors (Fig 3).

PTVX	RTVX
PTVC	RTVC
PQVX	RQVX
PQVC	RQVC
PQMX	RQMX
PQMC	RQMC
PTMX	RTMX
PTMC	RTMC

Figure 3. Possible bias combinations of the four major CAS factors

Results:

Individual crew CAS state intra-race bias stability

The table below shows the PEP 4 letter profiles at the start and the end of the race for each member of the core crew (any change in between are also noted)

Crew Member	Start of Race (10.02)	Mid Race	End of race (8.03)
A	PTVX	PTVX	PTVX
B	PQMC	PQMC	PQMC
C	RQVX	RQVX	RQVX
D	PQMC/RQMC	PQMX	PQMX
E	RQMX/RQVX	-	RQMX
F	PQMX/PQMC/PQVC	PTMX	PTMC/PTVC
G	PTMX	PQMX	PQMX
H	PQMX	PTMX	PTMX
I	RQMX	RQMX	RQMX

Figure 4. Before race, mid-race and after race individual CAS state bias patterns of each crew member

A combinative bias pattern was ascribed a score between 1 and 16 (so for instance, PWMX was given the score 11, RSMC 8 and so on…). If there was a change in a single variable, for instance C changed to X, then this gave a score of two points difference from the original. If two variables changed, this gave a score of 4 points difference. If three variables changed, this gave a score of 8 points difference, and if all four variables changed, the difference between the two scores was 16.

Pearson's correlation was then used to measure correlation between sets of data. There was a positive correlation between the before-race and mid-race CAS state bias scores, $r = 0.81$, $n = 9$, $p = 0.0018$. There was a positive correlation between the before-race and mid-race CAS state bias scores, $r = 0.98$, $n = 9$, $p < 0.001$. There was a positive correlation between the before-race and mid-race CAS state bias scores, $r = 0.88$, $n = 9$, $p < 0.001$.

Which states were susceptible to change

The results indicate that the most receptive states to change and development were the Trust-Questionning of self state and the Expand- Consolidate state. The least receptive to change were the Present-Reserve state and the Empathy- Evaluate states. This suggests that ego definition is quite a malleable factor which can be influenced by circumstances and experiences. In the same way, the degree of change and challenge one wants can also change; people's thresholds toward risk can go up and down.

Not included in these results are the measures of Trust of others which also showed less malleability to change, and Control, which did vary to some degree. Trust of others, when it did change was negatively correlated with changes in Trust of self. So, for example, if Trust of self became stronger this tended to be correlated with Trust of others getting lower, and vice versa.

Individual projection of crew CAS state

A wide variety of crew CAS state combination patterns were projected by individual members. Pearson's correlation was then used to measure correlation between the individual crew CAS state bias patterns at the end of the race and the crew CAS state pattern projected by individual members. There was a positive correlation between crew CAS state and individual CAS state patterns, $r = 0.97$, $n = 9$, $p < 0.001$.

Crew Member	Mid Race	End of race (8.03)	Projected crew CAS state
A	PTVX	PTVX	**PTVX**
B	PQMC	PQMC	**PQMX**
C	RQVX	RQVX	**RQVX**
D	PQMX	PQMX	**PQMX**
E	-	RQMX	**RQMX**
F	PTMX	PTMC/PTVC	**PTMC/PTVC**
G	PQMX	PQMX	**PTMX**
H	PTMX	PTMX	**PTMX**
I	RQMX	RQMX	**RQMX**

Figure 5. Mid- and End of race race individual CAS state bias patterns of each crew member and crew CAS state pattern projected by each individual.

Discussion

Overall, no individual changed significantly in more than one trait, from one polarity to the other. Four individuals (D, F, G and H) all changed in one of their traits and F also settled for a marginal tendency in a second. Five individuals scored consistently throughout without any changes. A correlation of 0.88 between the start and the end of a race is significant and suggests that there is a strong relationship between the individual crew CAS state combinations at the start and end of the race.

Higher CAS state adjustment occurred in the early part of the race than the latter part of the race- there is a lower correlation between the start and mid-race data sets (0.81) and the mid-race and end of race data (0.98) sets. The drop off in CAS state adjustment that occurred over the latter part of the race suggest that adjusted CAS state became iterated as a new, stable CAS state after initial establishment.

These results provide evidence that CAS state represents a committed orientation of cognitive, affective and social state factors rather than a mood or fleeting mental state. The results support the view that, under strain (an 11 month race within the confines of a small, racing yacht with twelve other crew members), individual self-identity strategies as measured by CAS state, is persistent and resistant to significant modulation. The results also indicate that where modulation may take place, it will occur during an initial phase of environmental change.

One explanation for this is that changes in external environment cause strainful dissonance between an individual's self-strategies and the required environmental strategies. This strain reduces when individuals adjust their self-strategies to accommodate the requirements of the environment, thereby dissonance. This model may account for why further adjustment of CAS state was not evidenced over the latter course of the race. As dissonance between external environment and internal CAS state reduces through adjustment, the motivator to change CAS state reduces, because stressful dissonance is lower. Such a model suggests that strain for individuals is created by dissonance between one's CAS state and one's environment. Effortful work is conducted by individuals to overcome this dissonance, increase environmental fit and reduce strain.

Such a theory would fit with Fiske and Taylor's (Fiske, Taylor 1985) notion of cognitive miserliness. Cognitive miserliness is a theory that is theory that the brain will deploy the minimum resources toward cognitive perception, deploying heuristic judgements to make decisions more speedily and at lower cost. Kahneman and Tversky (Kahneman et al. 1982; Kahneman, Tversky 1973;) provided many examples of such effort-reduction strategies.

Inherent in this proposal of cognitive miserliness, is the assumption that, whilst reducing cognitive load heuristic cognition builds in faults and biases to perception and judgement. However, Gigerenzer has argued that there may be numerous evolutionary advantages to heuristic perception (Gigerenzer, Todd 1999; Goldstein, Gigerenzer 2002), enabling efficient judgements to be made which guide future actions. This result

suggests that CAS state bias may be important for identity as much as efficiency. Individual CAS state stability over the course of such a considerable life-challenge reflects a robust psychological commitment that an individual has made to preserving their own sense of self identity. Sarbin uses the term 'defended' to refer to how people have the facility to edit their self-narratives so that the narrative is 'protected, defended or enhanced' (Sarbin 1986b). This commitment, which Sarbin claims can even involve defending counter-factual narratives is evidenced in these results (Rivera, Sarbin 1998). The current result supports a strong defending of one's self-identity strategies in the face of both opportunity and challenge.

Reducing effortful cognitive-affective-social strain

The results indicate that there was very little difference between the landscapes that the individuals created for themselves and the landscapes they created for the whole crew (r= 0.97). The only differences were between B's individual and crew landscape, which shifted from PWMC to PWMX, and G's individual and crew landscape, which shifted from PWMX to PSMX (though G had previously scored PSMX in her own individual landscape).

The high correlation between an individual's own CAS state and their projection of the CAS state biases of the crew as an entity suggests that tolerating a dissonance between one's own self-identity and the perceived group-identity is unmanageable. Constructing a fit between one's own state and the conjectured ideal state for the wider group appeared to be an almost universal need for the crew members. Individuals it seems 'projected onto' the wider crew their own interpretation of events; in other words, each person believed that the other people saw things as they did.

A question that is posed by this result is how such multiple versions of projected 'group-need' could be tolerated in the space of a thirty foot yacht. Common sense would predict that such divergent conceptions of what other's needed would have lead to disharmony very rapidly.

One explanation for this may be that individuals on the boat quite quickly created 'micro-cultures' around them which reinforced their own personal conception of what the boat needed. In other words, people gathered reinforcing evidence to support their sense that the crew really needed the things they themselves needed. They may have done this by selecting friends, forming bonds with particular people; focusing on certain bits of data but filtering out others.

Kahneman identifies cognitive biases such as representation bias, in which individual's may preference a coherent version of events over a strictly logical one (Kahneman et al. 1982). Such biases may contribute to how we create cognitive 'consonance' very quickly. Presumably we do this by both filtering what we see, feel and hear and also acting to influence the situation around us to make it meet our own needs more. Perhaps on the boat, individuals created micro-cultures within which their own personal view of things could be represented, supported and remain unchallenged.

Conclusions

This research has provided evidence that an individual's biased pattern of CAS state is not a measure of fleeting mood but rather a commitment to an ongoing state of mind, reflecting a projection of cognitive-affective-social self-strategies. Such biases are not immune to adjustment; strainfull dissonance between an individual's CAS state bias and environmental requirements can motivate adjustment of an individual's CAS state. Such adjustment is conjectured to reduce discrepancy between the two, increasing 'fit' and reducing strain, a conclusion supported by a cognitive miserly notion of cognitive resource deployment. Evidence that individuals have strong mechanisms to resist, adopting a view of reality that is shaped by collective needs rather than their own is also presented. The projection of a group-CAS state bias which exhibits a high degree of similarity to personal-CAS state bias suggests that individuals engage in both narrative construction as well as strategic actions to construct a version of the world around them which represents, supports and reinforces their own.

Outstanding questions

Small sample size reduces the weight that can be placed on the conclusions. Some concerns exist about the commitment of participants to completing the PEP assessments toward the end of the race; verbal feedback suggested that tiredness and remoteness may have reduced participant effort. Because of the geography of the study, I was not able to remain on contact with the crew during the race, who were thousands of miles away, and encourage commitment to the study. There is no evidence that participants sabotaged the process however, nor was participation coerced. Evolution of an online version of the PEP would now allow for experimental conditions to be more tightly controlled if the study were repeated.

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