

Applying the Concept of Weather Salience to a Specific User Community: General Aviation Pilots

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The Concept of Weather Salience (WxS)

- Derived from environmental psychology and “represents the degree to which individuals attribute psychological value or importance to the weather and the extent to which they are attuned to their atmospheric environments” (Stewart, 2009)
- Represents individual differences in weather orientation
- WxS considered important because a better understanding of people’s ***“orientations, perceptions, and attitudes toward the weather is necessary to increase the utility of currently available weather and climate products”*** (Stewart, 2009 and other sources)

The Concept of Weather Salience (WxS)

- Stewart and collaborators sought to measure WxS in different samples of the U.S. population (e.g., Univ. of GA students, general U.S. population) through means of a weather salience questionnaire (WxSQ)
- WxSQ measures weather WxS in seven subscales
 - 1) Attention to weather and weather information
 - 2) Sensing and observing weather directly
 - 3) Effects of weather on daily activities
 - 4) Effects of weather on daily mood
 - 5) Attachment to weather patterns
 - 6) Need to experience weather variability
 - 7) Attention to weather when it may result in a holiday or cancellation

WxS Subscale Questions

Attention to weather and to weather information

1. I use the internet to obtain weather forecasts or weather information (temperatures, radar images).
2. I look at the weather radar on television or on the internet to see where precipitation (i.e., rain, thunderstorms, snow, etc.) may be occurring.
3. I seek out more up-to-date weather information than what is provided on the television or radio.
4. I watch television or listen to the radio to get a weather forecast so that I can know what to expect.
5. I plan my daily routine around what the weather may bring.
6. If a friend or family member asked me what the weather forecast was for today, I could not tell him or her what to expect.*
7. The weather or changes in the weather really do not matter to me.*
8. I only pay attention to what the weather is doing when the conditions become severe (e.g., flooding, heat wave, hurricane, thunderstorm, tornado, winter storm, etc.).*
9. I take notice of changes that occur in the weather.

Sensing and observing weather directly

9. I take notice of changes that occur in the weather.
18. I can tell when there seems to be a lot of moisture in the air.
19. I take notice of how the air outside sometimes smells differently after it rains.
20. I notice how the clouds look during various kinds of weather.
21. I look forward to what changes the weather may bring.

Effects of weather on daily activities

- 5. I plan my daily routine around what the weather may bring.
- 28. During certain seasons of the year, the weather conditions routinely (i.e., at least once per week) affect my ability to perform tasks at school or work.
- 29. The work that I do (or did previously) is affected by the daily weather conditions.

Effects of weather on daily mood

- 7. The weather or changes in the weather really do not matter to me.*
- 10. How the weather makes the outside environment appear tends to affect my mood during that weather.
- 11. The changes in the weather cause my mood to change.
- 12. There is a particular kind of weather that makes me feel good emotionally.
- 13. The weather affects my mood from day to day.
- 14. Certain types of weather make me feel better emotionally than other types of weather.

Attachment to weather patterns

- 15. I am attached to the weather and climate of my hometown (or the place of where my family of origin lives or lived).
- 16. I am attached to the climate of the place where I live or used to live.
- 17. I am attached to the climate that exists in the location where I lived as a child or adolescent.

Need to experience weather variability

21. I look forward to what changes the weather may bring.

22. There are some geographical locations where the weather changes so little that it would be boring to live there.

23. It is important to me to live in a place that offers a variety of different weather conditions throughout the year.

24. I like to experience variety in the weather from day to day.

Attention to weather when it may result in a holiday or cancellation

25. I become interested in the weather when there is a possibility that I may have a weather-related holiday (e.g., snow day from school or work).

26. I enjoy having a weather-related holiday (e.g., a holiday stemming from snow or ice).

27. In the past I have wished for weather that would result in a weather-related holiday.

Some Highlights from Stewart's Studies

- Women scored higher in WxS than men
- WxS total scores and subscale scores were influenced by the following:
 - Ownership of a thermometer
 - Knowledge of weather watches and warnings
 - Experiencing an extreme weather event
- General population sample scored higher in WxS than sample of Univ. of GA students
- Mean WxS scores of people living in dry regions were statistically lower than those of people living in temperate and continental climatic regions

Data-Link Weather in the Cockpit Training Tools and Strategies

- FAA-funded research grant to examine adequacy of general aviation (GA) pilot weather education and training
- GA pilots are a specialized group of weather information users
- To our knowledge, the WxSQ has not yet been taken by a specialized user group
- Full WxSQ was attached to an aviation weather knowledge exam given to 80 student pilots in various stages of pilot training at Embry-Riddle's Daytona Beach campus

Sample of this Study

- Total in sample: 80
- Mean age: 20.61 ± 2.55
- Mean number of flight hours: 148.54 ± 119.08
- Number of instrument-rated pilots: 33
- Number of Certificated Flight Instructors: 6
- State where most of flight training was completed: Florida – 69; New Jersey – 2; Puerto Rico – 2; one for each of seven other states

Results

Group	Sub scale 1 Attn to wx & wx info	Sub scale 2 Sense & obs wx directly	Sub scale 3 Wx effects on daily activities	Sub scale 4 Wx effects on daily mood	Sub scale 5 Attach-ment to wx patterns	Sub scale 6 Need to experience wx variability	Sub scale 7 Attn to wx when may result in holiday/can'x	Total
Embry-Riddle flight students (N=80)	35.01	21.57	9.95	20.05	10.03	14.42	12.28	107.65
UGA students (N=946)	29.21**	18.30**	7.61**	21.15	9.98	13.04**	13.21*	98.96**
Gen Pop (N=1465)	30.93**	17.99**	7.82**	22.64**	10.18	15.97**	8.86**	114.38**

Statistically significant differences between Embry-Riddle flight school students and the UGA students and general population sample: * $p < .01$, ** $p < .001$

Some Thoughts on the Results

- Subscales:
 - ERAU flight students' WxS scores were generally as anticipated
 - ERAU significantly higher than UGA and general population on three subscales pertinent to aviation practices
- Overall WxS:
 - When compared to fellow students (UGA), ERAU flight students score higher
 - However, ERAU flight students have lower overall WxS than general population
- GA pilots are using wx products and likely amenable to future products and interventions
- WxSQ could potentially be used longitudinally to assess the impact of new wx education, services, and training

Questions?



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