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Public (Mis)understanding of the UV Index

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The ultraviolet index (UVI) has been regularly reported in Australia for a decade but utilisation remains extremely low (~5%). Blunden, Lower, and Slevin, in a 2004 Journal of Health communication article, suggest that Australians' understanding of the UVI is "good," and education to increase awareness of the index is therefore no longer warranted. To test this position, focus groups were conducted followed by an intercept survey of 404 residents of Perth, Western Australia, aged 16–44 years, to explore understanding and familiarity with the UVI. Results suggested that far from being "good," the familiarity and understanding of the UVI of at least half of Australians is poor. This was exemplified by the following: mean estimations of average UVI values in summer and winter being highly exaggerated (19.8 and 11.8, respectively); 61.2% not appreciating that the UVI is independent of temperature; at least 55.0% not appreciating that UV conditions peak at solar noon; and 23.3% of 22–44 year olds confusing the UVI with a "burn-time" measure. People who do not understand the UVI are unlikely to utilise it effectively. It therefore remains possible that utilisation of the UVI remains low because understanding is poor. Future efforts to improve utilisation of the UVI, particularly among those looking at new display formats, may therefore be ineffective, unless they also incorporate strategies to facilitate understanding of the measure.

Australia has the highest rate of skin cancer of any country in the world, with more than 270,000 new cases being reported each year and more than 8,000 of these being potentially fatal melanomas (Australian Institute for Health and Welfare & Australasian Association of Cancer Registries, 2002). The incidence of melanomas of the skin continues to increase for both sexes in Australia at about 5% per year (Marks, 2002; Threlfall & Thompson, 2004). These increases have been mirrored in fair-skinned populations worldwide at between 3% and 7% per year since the early 1960s (Manins et al., 2001). It is well established that ultraviolet (UV) radiation from sunlight exposure is directly associated with melanoma of the skin (Fears et al., 2002; National Health and Medical Research Council, 1996). However, a number of factors appear to moderate susceptibility to melanoma. The level of early childhood exposure to solar radiation appears to be one of the most important aetiological factors for predicting melanoma (Holman & Armstrong, 1984; Khlat, Vail, Parkin, & Green, 1992; Zanetti, Franceschi, Rosso, Colonna, & Bidoli, 1992). Constitutional sensitivity to sun exposure appears to be another moderating factor, with those who do not tan well but burn easily being more susceptible to skin cancers (National Health and Medical Research Council, 1996). Intermittent sun exposure also

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appears to be an important factor, with recreational sun exposure placing individuals at greater risk of developing melanoma than either occupational exposure or total exposure (Green, Battistutta, Hart, Leslie, & Weedon, 1996; Hemminki, Zhang, & Czene, 2003). The population of Australia is particularly susceptible to melanoma of the skin because it has a predominantly fair-skinned population, a climate and culture conducive to outdoor living, and, as the result of a diminishing ozone layer, UV levels that have risen in the country by about 10% per decade since 1980 (Manins et al., 2001).

Dedicated public awareness campaigns about the dangers of sun exposure have been ongoing in Australia since 1981 with the advent of the "SunSmart" and "Slip Slop Slap" campaigns, followed by legislative enactments including decreasing sales tax on sunscreens, occupational health and safety regulations for outdoor workers, and a "no hat, no play" policy in schools (Marks, 1995; Montague, Borland, & Sinclair, 2001). Despite such efforts, 45% of Australians still report getting sunburned at least once in any 12-month period (Clarkson, Donovan, Giles-Corti, Bulsara, & Jalleh, 2000).

In 1996 the Australian Bureau of Meteorology adopted the internationally standardised UV index (UVI) and began forecasting it for all major Australian population centres. Ever since, UVI forecasts have been routinely reported in Australian news media in association with weather bulletins, most frequently on television, but also on radio, in news print, and on the Internet (Kricker & Armstrong, 1998). Australian studies independently conducted in New South Wales, Victoria, and Queensland in 1997, and in Western Australia in 1998, suggested that public awareness of the UVI was reasonably high (64%–90%), but only a minority of people (24%–40%) reported using the index to modify their sun protection behaviours (Alberink, Valery, Russell, & Green, 2000; Blunden, Lower, & Slevin, 2004; Kricker & Armstrong, 1998; White, Hill, Borland, & Dobbinson, 1997). As these studies had all been conducted shortly after the UVI was first forecast, optimists predicted that it would merely be a function of time before people familiarised themselves with the measure and adopted correspondingly appropriate sun protection behaviours (e.g., Australian Radiation Protection and Nuclear Safety Agency, 2002). Unfortunately, this does not appear to be the case: only 37% of Australians reported using the UVI to help "make a decision" in the last month of summer 2004–2005 (Brown, 2005).

Measures other than reported use of the UVI also suggest actual use is low. For instance, although Blunden and colleagues (2004) reported 90% of their sample were aware of the UVI, only 3% could correctly recall the UVI forecast on the day of the interview. Furthermore, a Victorian study conducted in 2003 demonstrated that the inclusion of the UVI in e-mailed weekend weather forecasts failed to make an impact on reported hat use, sunscreen use, sun avoidance, or sunburn, when compared with the habits of a control group e-mailed temperature forecasts alone (Dixon, Hill, Karoly, Jolley, & Aden, 2005). Thus after nearly a decade of the UVI being broadcast in Australia, it appears that a large majority of Australians are aware of the UVI, but this awareness does little to prompt sun protective behaviours.

A recent systematic review assessed the effectiveness of using tools such as the UVI in mass media communications to improve sun protection behaviours (Saraiya et al., 2004). The authors were cautious to make any recommendations, however, due to a lack of available research. Studies not only from Australia, but also from New Zealand, Canada, and the United States, repeatedly suggest that understanding

of the UVI is suboptimal and further public education is desirable (Alberink et al., 2000; Bulliard & Reeder, 2001; Dixon & Armstrong, 1999; Geller et al., 1997; Kime & Reeder, 2002; Kinney, Long, & Geller, 2000; Lovato, Shoveller, & Rivers, 1998). Several theories suggest that awareness and understanding are insufficient for persuasion and health behaviour change (Conner & Norman, 1995; Egger, Donovan, & Spark, 1993). In the case of the UVI, factors such as risk perceptions and health beliefs are likely to be important moderators of the extent to which it influences sun protection behaviours. While understanding alone of the UVI may not be sufficient for its appropriate utilisation, however, understanding remains a necessary prerequisite for appropriate utilisation. For example, individuals aware of the UVI but who confuse it with an indication of minutes-to-burn would be more likely to prolong their sun exposure when the UV index is *higher* rather than lower. Likewise, those who think that UV levels remain unchanged throughout the course of the day are unlikely to perceive the need for greater sun protection behaviours when UV conditions peak at solar noon than in the early morning or late afternoon.

Previous research investigating understanding of the UVI has largely assessed broad appreciation only, typically concentrating upon the proportion of samples who express awareness of the UVI and those able to recall the forecast for the day of the interview. Blunden and colleagues, (2004) however, also assessed public understanding of a number of key concepts surrounding the UVI, such as what the UVI actually measures, the importance of solar noon, and familiarity with the warning labels associated with various UVI integers. Based upon their results, the authors suggested that Australians have "a good level of general knowledge about the (UV) Index" (p. 219). This conclusion has since been accepted by others (e.g., Bowles, Dobbinson, & Wakefield, 2005) but was derived from a number of equivocal results. The first basis for their conclusion was that *all* their participants were able to associate the UVI with themes surrounding sun protection, skin cancer *or* the sun. Not all of these associations were accurate or meaningful, however; a majority (62%) of their sample correctly defined the UVI as a measure of the "intensity" or "strength" of "UV radiation" or "rays" from the sun, but the remaining 38% provided definitions such as the UVI being an indicator of "the amount of sunburn," "the risk of skin cancer," or "skin damage due to UV" (p. 213). Blunden and colleagues (2004) also claimed that a large majority (88%) of their participants were aware that UV levels peak at solar noon. A closer inspection of their results reveals that 31% of participants suggested UV levels peak between 12 and 1 PM, apparently demonstrating an appreciation of the role of solar noon. The remaining 57% of participants, however, who deemed to appreciate the significance of solar noon nominated any other time between 10 AM and 3 PM, raising the possibility that these particular participants were unaware of the importance of solar noon. Another equivocal result was that only a minority of the sample (12%) was able to correctly suggest the warning label for a UVI of 7, a result far *lower* than the 20% expected by pure chance. This suggests a low level of familiarity with the labels associated with the UVI. Therefore, rather than most Australians having good general knowledge about the UVI, it is possible that a substantial number have a poor appreciation.

Given the equivocal nature of evidence regarding public understanding of the UVI to date, the aim of the present investigation was to replicate the investigations of Blunden and colleagues (2004) but also to clarify some of the ambiguities inherent within their results, and to expand upon these by testing the limits of public

understanding of the UVI. The investigation was conducted in two stages, consisting first of focus groups to form hypotheses about the current level of public knowledge of the UVI. The second stage was to test these hypotheses on a representative sample of Western Australians at risk of sunburn.

Study One

Methodology

Participants for the focus groups were recruited in February 2004 via random telephone selection from White Pages listings within Perth, Western Australia, situated at a latitude of 32 degrees south of the equator. Participants were told they would be participating in a discussion on "health topics" and would be remunerated for participation. A total of 44 participants were recruited to form 6 focus groups stratified by sex and age groupings (16–21, 22–30, and 31–44 years), with an average of 7 participants per group. This range of ages was selected because melanoma is *the* most common form of cancer in Western Australia within this age group (Threlfall & Thompson, 2004). All groups were conducted in a semistructured manner, following similar lines of questioning, and audiotaped. The investigators reviewed transcripts of the group discussions and clustered responses into recurrent themes. The relationships between themes then were examined, as was the link between themes and sex and age groups.

Results

Participant responses were largely consistent across groups, with no discernible differences between sex and age groupings. When asked the question, "What measures are reported in weather forecasts," the groups consistently mentioned temperature first, followed by measures of rainfall, wind, humidity, seas, and barometric pressure. The UVI was also mentioned but appeared to be less salient than the previously mentioned measures. When prompted, most participants reported familiarity with the UVI. They frequently reported seeing the UVI forecast on television, but fewer had heard it reported on radio, and fewer still had seen it reported in newspapers. None had noticed it reported on the Internet.

A majority understood that higher UVIs indicate greater intensities of solar UV radiation, chiefly understood in terms of higher values indicating greater risks of getting sunburned. Several participants confused the UVI with a measure of "burn time," however, thinking that it indicated the number of minutes it would take to get sunburned. These participants erroneously inferred that a lower rather than a higher UVI would indicate a greater risk of getting sunburned. When asked what range of values the UVI could fall within, most participants guessed that the minimum value was either 0 or 1. Upper levels varied from 5 to 15, however, with no participants evidencing great confidence in their responses. There was widely expressed interest when groups were informed that UVI values between 0 and 16 occurred within Perth.

Participants appeared to associate UV levels directly with the temperature, assuming a positive and linear relationship between the two measures. This manifested itself in a common belief that UV levels continue to increase beyond midday and peak in the late afternoon, when temperatures tend to be the hottest within the

city. There was widespread lack of appreciation of the relationship between solar noon to peak UV levels. Many participants were aware that they should stay out of the sun between 10 AM and 3 PM, as recommended by the Cancer Council Western Australia, but they did not necessarily draw a link between these times and solar noon.

From personal experience, most participants knew that it is possible to get sunburned with the sun behind cloud cover, but none were confidently able to specify the scale of effect in terms of UV intensity; some suggested that the UVI would be the same, some thought it would be slightly less, and others suggested that the clouds would serve as some form of reflector to magnify UV levels.

The participants demonstrated little awareness of the UVI forecast for the day of discussion. Participants rarely reported using the UVI to modify their sun protection behaviours, with most stating that if they planned to spend extended time outdoors in the summer months they would automatically take sun protection precautions, such as covering up and wearing sunscreen, regardless of the UVI forecast for the day. Most participants correctly stated that the UVI forecast was in the "extreme" category for virtually the entire summer, and apparently for this reason more than any other, some participants said they largely ignored UV forecasts. This was further emphasised by many participants being uncertain what warning labels other than *very high* and *extreme* existed for the UVI.

Overall, the participants recognised the potential value of any UV forecast measure, such as the UVI, to inform people to prevent skin cancer. Their general consensus, however, held that reporting a single integer and warning label for the UVI failed to facilitate meaningful understanding of UV conditions to the general public.

Discussion

As reported in previous literature, most participants were aware of the existence of the UVI. In contrast to the results of Blunden and colleagues (2004), however, participants appeared largely unfamiliar with most characteristics of the measure, including its range, independence of temperature, interaction with cloud cover, and peak at solar noon. As such, the following hypotheses were developed to be tested quantitatively on a representative sample from the Western Australian population:

The majority of the population

H_1 – is unaware of the range of the UVI;
H_2 – believes the UVI is dependent on the temperature;
H_3 – is unaware that the UVI peaks at solar noon; and
H_4 – is unaware of the interaction of the UVI with cloud cover.

Study Two

Sample

Participants were recruited in January 2005 via intercept interviews conducted in the central business district of Perth. They were screened to ensure they were local residents of Perth, English speaking, aged between 16 and 44 years, aware of the UVI, and had been sunburned on at least one occasion within the past 12 months, defined as any amount of reddening of the skin after being in the sun. No inducements were offered for participation.

Materials

A structured questionnaire was developed by adapting items from the Blunden and colleagues (2004) study. Items were reviewed by three public health and cancer control experts to ensure face and content validity. The questionnaire was piloted on a sample of 20 participants from the desired target group, recruited in the central business district of Perth. The pilot suggested that several items be altered to aid in the flow and interpretation of questions. The final version of the questionnaire comprised 10 questions regarding knowledge of the UVI. These asked participants:

- whether they could recall the UVI and temperature forecasts for the day;
- to estimate the average UVI in the middle of Perth winters (UVI = 3) and summers (UVI = 12), with those claiming not to know being asked to make their best guess;
- to state whether the following statement is true or false: "*The UVI tells you how long it will take to get sunburnt—for instance a UVI of 15 means it will take 15 minutes to get sunburnt and a UVI of 10 means it will take 10 minutes to get sunburnt;*"
- to identify the five warning labels used for the UVI from a list of 10 alternatives;
- whether the UVI is usually higher on a clear day at 11 AM or at 3 PM (Perth solar noon is between 12:00 and 12:20 PM in summer; therefore, 11 AM is approximately 2 hours closer); and
- to estimate the UVI under moderate cloud cover if the clear sky forecast was 12 (normally reduces by one third, i.e., to 8).

Results

In total, 2,020 people were approached by the interviewers. There were 844 who declined to participate, representing a refusal rate of 41.8%. A further 376 (18.6%) were non-Perth residents, 178 (8.8%) had not heard of the UVI, 127 (6.3%) had not been sunburned within the past year, and 91 (4.5%) were outside the target age group, spoke insufficient English, or previously had been interviewed. The remaining 404 (20.0%) met the study criteria and agreed to participate. The final sample consisted of 201 males and 203 females with an average age of 29.4 years (SD = 5.3) who reported having been sunburned a median of three times in the past 12 months.

Results are displayed in Table 1. There were no significant differences observed between sexes or age groupings, unless otherwise specified.

Of those participants who estimated values for both summer and winter, a paired-samples t test confirmed that they understood UVI averages are higher in summer than winter ($t(298) = 7.660$, $p < .001$). The mean distance of participant estimates from correct UVI averages were +8.8 (95% CI 7.4–10.2) for winter and +7.2 (95% CI 4.6–9.7) for summer. A paired samples t test suggests that this difference is not statistically significant ($t(298) = 1.617$, $p = .107$). Between 13% and 15% of participants were able to make some form of educated guess (within one integer) for winter and summer, respectively, but very few (6%) were able to approximate both seasons. A greater proportion of participants was able to make an approximate nomination for the summer than winter average, but a chi-square analysis suggests that this difference only approached statistical significance ($\chi^2(1) = 3.620$, $p = .057$).

Participants were significantly more likely to claim knowledge of the temperature forecast than the UVI forecast ($\chi^2(1) = 21.349$, $p < .001$). All participants

Table 1. Intercept interview UVI item responses ($N = 404$)

What is the average UVI in Perth for...	Winter			Summer		
Mean Participant Estimate (95% CI)	11.8 (10.4–13.2)			19.2 (16.6–21.8)		
	n	%	95% CIs	*n*	%	95% CIs
Correct responses (UVI = 3 and 12)	21	5.2	3.0–7.4	33	8.2	5.5–10.9
Approximately correct (±1)	51	12.6	9.4–15.8	60	14.9	11.4–18.4
Don't know	105	26.0	21.7–30.3	96	23.8	19.6–27.9
What was the forecast today for the...	Temperature			UVI		
	n	%	95% CIs	*n*	%	95% CIs
Claiming to know	187	46.3	41.4–51.2	21	5.2	3.0–7.4
Correct response	75	18.6	14.8–22.4	2	0.5	0.0–1.0
Approximately correct (±1)	133	32.9	28.3–37.5	4	1.0	0.0–2.0

	Response	*n*	%	95% CIs
If the UVI forecast for a clear day is 12, what value would it usually be under moderate cloud cover? [8]	<8	44	10.9	6.0–15.8
	8	**49**	**12.1**	**8.9–15.3**
	9–11	98	24.3	20.1–28.5
	12	165	40.8	36.0–45.6
	13+	28	6.9	4.4–9.4
	Don't know	20	5.0	2.9–7.1
	Total	404	100.0	

(*Continued*)

Table 1. Continued

Is the UVI usually higher at 11:00 AM or 3:00 PM on a clear day? [11:00 AM]	**11:00 AM**	**184**	**45.0**	**40.1–49.8**
	3:00 PM	194	48.0	43.1–52.9
	Same	21	5.2	3.0–7.4
	Don't know	7	1.8	0.5–3.1
	Total	404	100.0	
State which of the following labels are used for the UVI . . . [low, moderate, high, very high, extreme]	**High**	**379**	**93.8**	**91.4–96.1**
	Very High	**361**	**90.3**	**87.4–93.2**
	Extreme	**354**	**87.6**	**84.4–90.8**
	Low	**333**	**84.1**	**80.5–87.7**
	Moderate	**332**	**82.2**	**78.5–85.9**
	Extremely high	230	57.5	52.7–62.3
	Medium	209	51.9	47.0–56.8
	Dangerous	96	23.9	19.7–28.1
	Very hot	57	14.1	10.7–17.5
	Small	35	8.7	5.9–11.4
Is it true or false that the UVI numeral indicates the number of minutes it takes to get sun-burnt? [False]	True	62	15.3	11.8–18.8
	False	**335**	**82.9**	**79.2–86.6**
	Don't know	7	1.8	0.5–3.1
	Total	404	100.0	
Is the UVI dependent or independent of the temperature? [Independent]	Dependent	195	48.3	43.4–53.2
	Independent	**157**	**38.8**	**34.0–43.5**
	Don't know	52	12.9	9.6–16.2
	Total	404	100.0	

Correct responses are in bold.

who suggested that they were aware of the UVI forecast for the day of the interview ($n = 16$) also suggested that they were aware of the temperature forecast. Even this small number of participants, however, was significantly more likely to correctly recall the forecast for the temperature than UVI ($\chi^2(1) = 6.857$, $p < .01$).

In terms of assessing appreciation of the effects of cloud cover on the UVI, the largest proportion of participants (47.3%; 95% CI 42.4–52.1) correctly nominated UVI values lower than 12. A one-sample t test using 12 as the test value confirmed that a significant proportion of participants nominated UVI values lower than 12 ($t(383) = 7.729$, $p < .001$). Approximately one fifth (19.8%; 95% CI 15.9–23.7) of participants suggested reasonably accurate values of between 7 and 9.

Nearly one sixth of participants (15.3%; $n = 62$; 95% CI 11.8–18.8) believed, or were willing to believe, that the UVI is an indication of burn time. Half as many 16- to 21-year-olds (11.3%; 95% CI 7.4–15.2) held this belief in comparison with those between 22 and 44 years (23.3%; 95% CI 16.4–30.2). A chi-square analysis confirmed that this age difference was statistically significant ($\chi^2(1) = 10.310$, $p < .01$).

For each participant, scores out of five were calculated for the number of correctly identified UVI category labels and another score out of five for mistakenly identified decoy labels. A paired samples t test comparing these two scores suggests that participants were significantly more likely to identify the true UVI category labels over the decoy labels ($t(383) = 39.425$, $p < .001$).

Participant knowledge of the independence of the UVI and temperature was examined by employing a binomial test using 0.5 as the test proportion. The results suggested that a significantly greater proportion of participants deemed the UVI to be *dependent* on temperature than *independent* ($p < .05$). Female participants were also significantly more likely than the male participants to suggest that the UVI is dependent upon the temperature ($\chi^2(1) = 4.967$, $p < .05$).

A larger proportion of respondents indicated that UV levels would be higher at 3 PM than 11 AM. A binomial test using 0.5 as the test proportion suggested that this difference was statistically significant ($p < .05$). A majority of respondents who thought the UVI is *dependent* upon the temperature incorrectly nominated 3 PM (61.1%; $n = 102$) and a majority of those who thought the UVI is independent of the temperature correctly nominated 11 AM (52.2%; $n = 84$; $\chi^2(1) = 5.807$, $p < .05$).

Discussion

The participants in the present survey are a representative sample of Australians who get sunburned at least once per year. The results suggest that these people have a generally poor appreciation of the UVI. Nearly one quarter over the age of 21 years believe, or agreed when prompted, that the UVI is a burn-time measure; many had little idea of within what ranges the UVI occurs Perth, with many substantially over estimating the average UV levels for both the winter and summer seasons, and one quarter of participants unwilling to guess maximum values in either summer or winter. Only a very small proportion of participants either knew or was able to correctly guess average UVI values for either season, and no one was able to correctly nominate both.

Participants appeared to be more familiar with UVI conditions in summer than in winter, presumably due to UV conditions being more salient in the summer months, and many media outlets only reporting the UVI in summer. Their greater

accuracy in nominating summer over winter averages, however, only approached statistical significance ($p = .057$). In regards to knowledge of ranges and averages of the UVI, at least one positive aspect from the present results is that participants were reliably able to suggest that the UVI is lower in winter than in summer. Participants also appeared familiar with the warning labels attached to various levels of the UVI and were good at identifying *all* warning labels from amongst decoy labels. This quantitative result appears to confirm the suggestion from the focus groups that people attend to the warning labels more so than the integers of the UVI.

The proportion of participants who claimed awareness of the UVI forecast for the day of the interview was consistent with previous research, in that it was very small. The proportion who could *correctly* recall the forecast was smaller still. This confirms the extremely low salience of the UVI as suggested by the focus groups. The proportion of participants who claimed awareness of the temperature forecast (about half) serves as a useful comparison in this case. Since the UVI forecast is customarily reported with the temperature forecast, it is unlikely that people who fail to observe the temperature forecast would observe the UVI forecast. This was confirmed by the fact that no participants who claimed to not know the temperature forecast claimed to know the UVI forecast. Thus even if health promotion efforts were made that increased the salience of UVI forecasts to levels matching the temperature forecast, it is unlikely that more than half of the people at risk of sunburn would ever attend to the index on any particular day.

Approximately half of participants thought UVI levels would be lower under cloud cover and half thought it would make no difference or be higher. The implication that half would deem the need for sun protection the same or even greater under cloud cover is not in itself a cause for concern, if it encouraged sun protection behaviour under such conditions.

In regards to knowledge of when solar conditions peak, the proportion of respondents who nominated 3 PM, or claimed not to know, or thought that conditions would be the same as at 11 AM, comprised a majority of respondents (55.0%). This result suggests that these participants had a poor appreciation of the relationship between solar noon and peak UV conditions and directly contradicts the conclusions of Blunden and colleagues (2004), who stated a large majority of their respondents understood the significance of solar noon. Nonetheless, the focus group results of the present study, together with the results of Blunden and colleagues (2004), suggest that the message to avoid sun exposure between 10 AM and 3 PM appears to widely known. The present results suggest, however, that the majority of people do not appreciate *why* they must avoid sun exposure during these times. The relationship between peak UV radiation levels and solar noon is an important but easy concept to grasp. Further public education surrounding this simple concept may have potential to increase understanding, and, by extension, more effective utilisation of the UVI.

The related and similarly prevalent misconception that the UVI is dependent upon temperature is also of concern as such held beliefs increase the likelihood of people exposing themselves to UV radiation on cooler days. This should also be a target of education surrounding the UVI.

Overall, the present results suggest a greater lack of understanding of the UVI and the factors that effect UV conditions than suggested by Blunden and colleagues (2004). The present results suggest that most Australians appear to have a poor understanding of the UVI. Hence efforts in Australia to improve the salience of

the UVI via novel presentation formats may be ineffective, unless people's lack of understanding of the index is also taken into account. It appears that novel presentation formats of the UVI would best aim to emphasise the variability of UV conditions throughout the day such that people can more appropriately plan the timing of their outdoor activities, or at least the level of sun protection they need to adopt.

While a necessary prerequisite, however, it has yet to be established whether improving people's understanding of the UVI would lead to more use of the measure to inform their sun protection behaviours. It may well be that certain novel formats may lead not only to a better understanding, but also motivate greater use of the measure. This is an avenue for future research.

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