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Influence of varying intensities of natural area on-site interpretation on attitudes and knowledge

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4 TTW Survey Results

This chapter presents data in two main parts: those from the preliminary survey and those from the principal survey. The preliminary survey data assisted in the content design of the principal survey as discussed in the methodology chapter. Results that were significant to the outcomes of the principal survey and the objectives of the research thesis are presented in the following section.

4.1 TTW Preliminary Survey Results

A preliminary survey to gather visitor data was carried out at the TTW during October 1999. The preliminary survey sought to gather information relating to visitor demographics, their reason for visiting the site and the aspects of the site that provided the greatest impression in the context of a low intensity use of interpretation. The data were then used to construct the multiple choice questions for the principal survey. Over the two week survey period, 385 surveys were completed (approximately 7% of the visitor population during that period). The preliminary survey had a refusal rate of 32%.

4.1.1 Summary of respondent characteristics

Table 4.1 details the independent variables of the preliminary respondent group. The data approximately follows that described in the Australian Bureau of Statistics (2002) data pertaining to national park visitation in Australia.

Table 4.1: Summary of respondent variables from preliminary TTW survey data

Category	No.	%	Category	No.	%
Gender			TTW repeat visit		
female	203	52.7%	First time visit	315	81.8%
male	182	47.3%	Repeat visit	66	17.1%
<i>Not stated</i>	-	-	<i>Not stated</i>	4	1.0%
Total	385	100%	Total	385	100%
Age group (yrs)			Visiting with		
<15	7	1.8%	Friends	100	26.0%
15-24	38	9.9%	Family	148	38.4%
25-39	120	31.3%	Partner	115	29.9%
40-59	130	33.9%	Tour group	10	3.8%
60+	90	23.4%	Alone	8	2.1%
<i>Not stated</i>	-	-	<i>Not stated</i>	4	1.0%
Total	385	100%	Total	385	100%
Place of residence					
WA	155	40.7%			
Interstate	133	34.5%			
International	67	17.4%			
<i>Not stated</i>	32	8.0%			
Total	385	100%			

Slightly more females were surveyed than males while the most frequent age groups surveyed at the TTW site were between 25 and 59 years of age. This may reflect the family oriented nature of the site. Visitors under the age of 15 may be under represented in this survey as older companions generally accompanied them. There was a tendency for young group members to default to their older peers when completing the survey. That is, adults either took control of the survey or did not allow young members of the group to become involved.

The largest proportion of respondents resided within WA with interstate residents closely following in numbers. International visitors represented a significantly lower proportion in relation to local (Western Australian) and interstate residents.

The majority of respondents were with family groups, paralleling the national trend of social groups visiting national parks (ABS, 1999). The frequency of the “tour group” response may be an under-representation. Visitors taking part in bus tours, or other forms of tour groups, frequently did not wish to fill in the survey form due to time constraints. This resulted in the low frequency of the response. Anecdotal evidence suggested that up to 10 tour groups may visit the TTW site each day during peak periods. Tour group sizes seemed to range from 5 or 6 up to 50 individuals meaning several hundred people may visit the site as part of a tour group each day.

4.1.2 Main reason for visitation

Main reason for visitation was an open ended question to which the survey participant wrote a response. The reason given for visiting a natural area was suggestive of the meaning associated with place, how visitors interact with that place and are influenced by their experience. The most common responses were used to construct a multiple choice style question in the principal survey. Table 4.2 lists categories of responses given.

Table 4.2: Preliminary survey categorised reasons given for visiting the TTW site.

Response Category	No.	%
Natural Aspects	78	20.3%
Recommended	76	19.7%
It is a tourist attraction	67	17.4%
TTW structure	56	14.5%
Opportunistic visit	50	13.0%
Saw an advertisement	35	9.1%
To show others	35	9.1%
Wanted to see TTW again	4	1.0%
<i>Not stated</i>	8	2.1%
Total	409	106%

The most frequent reasons for visitation related to the natural aspects of the site. This category included references to the Tingle trees, forest and/or wildlife seen during the experience. This is indicative of the site as a place for viewing natural phenomena with aesthetic appeal. The “Recommended” category referred to reasons based on a personal recommendation by family, friends or tourism industry related contacts. Identification of the site as a tourist attraction included cases in which this was specifically stated by the respondent. This category relates primarily to the promotion of the TTW through the media as an important tourism destination.

The “TTW structure” category included statements identifying this structure as a main reason for visitation. “Opportunistic visit” included respondents who indicated that they were ‘just passing through’ and decided on the spur of the moment to visit the site. In contrast to this, the “Saw an advertisement” referred to responses that specified visitation to the site was a direct result of being exposed to promotional material in the media. Responses included in the category ‘to show others’ were almost entirely provided by repeat visitors and focussed on bringing friends or family to see the site. Very few responses by repeat visitors were due to a specific wish to see the TTW site again.

Responses referring to recommendations or tourism attraction status were determined to be secondary type reasons. That is, recommendations or tourism attraction status probably centred on a particular aspect of the site. As this research is concerned with the influence of on-site variables, specific attributes of the natural area itself were of prime importance rather than external factors such as recommendations to visit. The specific attribute that was recommended or that provides its tourism attraction status was not specified. Therefore, these options were not included in the principal survey as they are ambiguous in the context of this research.

Significant differences in the main reason for visitation were found between the repeat visitor and first time visitor groups ($\chi^2 = 151.98$, $p < 0.001$). Almost half (43%) of repeat visitors stated that their main reason for visiting the site at the time of the survey was to bring friends or relatives (i.e. “show others” category in Table 4.2). The next most frequent response was to experience the TTW again (18.5%). First time visitors mainly stated their reason for visiting was to experience the natural aspects of the site (22%), or because friends, relatives or tourism agencies recommended the site (21%).

Of the first time visitors, 13% identified the TTW structure as the main motive for visitation. The differing reasons for visitation of first time and repeat visitors were consistent with findings in past studies identifying repeat visitors as a distinct group (Fakeye & Crompton, 1991; Meis et al, 1995; and Ballantyne et al, 1998).

4.1.3 *Most remembered aspect of site experience.*

This was an open ended question that invited respondents to write down what they most remembered about the site. In addressing this, the preliminary survey sought to ascertain the impact the TTW site had on visitors in terms of the aspect of the experience that most influenced respondents. This provided information regarding the most influential components of the site that may have the greatest effect on attitudes and knowledge. The responses were categorised as listed in Table 4.3. Respondents frequently listed two or more aspects of their visit thus the accumulated proportions of the responses total more than 100 %.

Table 4.3: Preliminary survey most remembered aspect of TTW site experience

Response Category	No.	%
TTW structure	121	31.4%
Trees	118	30.6%
Feelings/emotions invoked	74	19.2%
Scenic view	21	5.4%
Fear of TTW structure	19	4.9%
Wildlife	16	4.2%
Ancient Empire Walk	11	2.8%
Organised activities / entertainment	6	1.5%
Minimal impact design	1	0.3%
<i>Not stated</i>	<i>30</i>	<i>7.8%</i>
Total	417	108%

Statements referring to the “TTW structure” specifically were most frequent, followed by references to the “Trees”. These were generally expressed in terms of wonder at the scale of the trees and engineering feat of the TTW structure.

The “Feelings/emotions invoked” category included statements referring to sounds, smells and visual impacts as well as general statements of emotion. For example, “Feeling small”; “A sense of wonder...” and “The peace and tranquillity ...” were included in the feelings/emotions invoked category along with statements such as “the damp smell...” ; “the cool darkness...” and “the movement of the TTW”. All of these may be grouped as sensory experiences. Most of the responses to this question could be classified in the Hendee et al (1971) appreciative-symbolic category of natural area experience, except perhaps the impressions left by on-site entertainment activities. This category of Hendee et al (1971) would include Shafer’s (1969) earlier identified emotional and aesthetic visitor appreciation categories. Such impacts of the site indicated a connection made between respondents and the site at a more intimate level than appreciation of the scale of the trees or engineering achievements.

The “Scenic view” was also frequently commented on by respondents. At the highest point of the TTW structure, visitors can see over the forest canopy to farm land in the valleys below. The high point of the TTW also invoked fear amongst a minority of respondents as indicated by the “fear of TTW structure” category. Respondents in this category commonly expressed feelings of fear in relation to the swaying motion of the TTW structure while being a long way off the ground. Some respondents commented that they had a fear of heights and intentionally wanted to experience the TTW in order to challenge that fear.

The “Ancient Empire Walk”, “organised activities and entertainment” and the “minimal impact design” made up the smallest proportion of responses to this question. Entertainment included artists, musicians and other demonstration activities employed at the site while organised activities involve children’s art and face painting as well as guided walks and talks during holiday periods. The low profile of the Ancient Empire Walk (AEW) is in contrast to the higher profile TTW structure indicating the dominance of the TTW in terms of the site design.

Perhaps in direct relation to the differing reasons for visitation Repeat visitor and first time visitor groups were also left with significantly different impressions of the site ($X^2 = 11.96, p < 0.05$). The repeat visitor group indicated mainly natural aspects of the site (“Trees”, “Scenic view” and “Wildlife”) as being most memorable, collectively making up 48.5% of repeat visitor responses. The second most frequently mentioned aspect by

repeat visitors, the TTW structure, was considerably less common (21.2%). First time visitor respondents were relatively evenly divided between natural aspects of the site (collectively 39%) and the TTW structure (34%). This highlights differences between repeat and first time visitors in terms of their perceptions of the site.

The greater focus of the repeat visitor group on natural aspects probably related to familiarity with the structural aspects of the site in conjunction with the low intensity of interpretation creating an absence of supplementary experiences. Repeat visitors are likely to be accustomed to the TTW structure and thus, are less inclined to explore its biophysical and/or engineering nuances. In addition, the low intensity of interpretation means that there are no other experiences available at the site apart from observing the surrounding forest and the experience of first time visitor companions. As the both the TTW structure and forest were new experiences for first time visitors, their attention seems to have been divided between the novelty of the structure and interest in the surrounding forest.

This finding is of interest in terms of the role of the TTW site with a low intensity interpretation strategy. A low level of interpretation may correlate with reduced influence on the part of repeat visitors. Incidental discussion with site staff also indicated that the interpretation that was installed at the site generally remained unchanged for a considerable amount of time. This suggests that there is nothing 'new' for repeat visitors to experience on return to the site. In addition, the management agency stated that the TTW structure itself was intended as the central interpretive experience (Field & Gough, 1998). While the TTW structure served as a major component of the experience for first time visitors, repeat visitors appeared to be less interested, returning mainly to expose new visitors to the unique thrill. Thus it appears that the role of the TTW structure in providing a provocative experience is less effective with repeat visitation.

4.1.4 Suggested improvements to TTW site

This was an open-ended question in the preliminary survey requesting that respondents suggest improvements to the site they considered were required. The responses to this question were categorised as detailed in Table 4.4. A "None required" response was counted if the visitor specifically indicated no improvements were needed. Respondents

may suggest more than one type of improvement meaning the frequency of the categories in Table 4.4 add up to more than 100%.

Table 4.4: Preliminary survey suggested improvements to TTW site.

Response Category	No.	%
None required	149	38.7%
More information	92	24.0%
Alter design of site	43	11.1%
Provide café / food kiosk	35	9.1%
Better crowd control	24	6.2%
Provide picnic / BBQ facilities	8	2.1%
Improve ablution hygiene	7	1.8%
Provide night tours	6	1.5%
<i>Not Stated</i>	68	17.7%
Total	432	112.2%

The “None required” category demonstrates that the most frequent response to this question was that no improvements were necessary. This indicated the majority of respondents considered that site adequate in terms of their expectations and/or were unable to make suggestions due to a limited frame of reference or limited experience.

“More information” was the next most frequent response. This category primarily consisted of comments that more signs were needed along the walk trails to provide information about the ecology and biology of the forest. A small proportion of comments suggested alternate media such as audio guides, hands-on displays and video presentations in the Tingle Shelter. The fact that this was the most frequent suggestion for improvement (not including the “None required” response) has direct relevance to the low intensity of interpretation on which the site design was based. Respondents seemed aware of this and responded with suggestions for a higher intensity mainly in the form of text based media such as trail side signs. Table 4.5 breaks down the “More information” category of suggested improvements to the site (n=92) into media types referred to in the respondents’ comments.

Table 4.5: Media types mentioned by respondents suggesting the need for more information in the preliminary TTW survey (n=92)

Suggested Media	No.	%
More trail-side signs	48	52.2%
Guide	6	6.5%
Photographs/pictures	4	4.3%
Audio	3	2.2%
Hands-on display	3	2.2%
Not specified	28	34.8%
Total	92	100%

It was interesting to note that while a few respondents suggested installation of photographic or hands-on interpretive media, the vast majority of suggestions were based on the installation of additional text based interpretation, particularly in the form of trail-side signs. This usually referred to signs with names and statistics in relation to flora and fauna though there were some suggestions for information relating to indigenous heritage as well as the TTW engineering and construction details. While a few respondents specifically suggested other media types, most of those who did not suggest more signs did not specify any particular media type at all. These respondents simply suggested more information was needed in regard to a particular theme or topic. The demand for more trail-side signs appears to work against the management intention of allowing the experience of the forest speak for itself, the underlying reasoning behind use of a low intensity of interpretation (Field & Gough, 1998).

The “Alter design of site” response category, in Table 4.4, included statements such as “Painting the TTW structure to better blend with the forest...” and making the walks longer. Other references were made to providing a larger car park, situating the car park further away from the walk trails and providing more walking tracks. A minority of visitors suggested food and beverage facilities in the form of a café, kiosk or vending machines. The least frequent responses were suggestions for BBQ or picnic facilities at the site and improved hygiene either through provision of more garbage bins or cleaner toilets.

A few suggestions were made regarding provision of night time tours of the site. Such tours are conducted during holiday periods. Participants must pre-book and have a group size of at least 10. Those respondents suggesting this as an improvement may not have been aware that night tours were already being conducted. This may be because they either had not seen any promotional material with regards to the night tours or that the promotion of such tours was low key.

Interestingly, although repeat visitor respondents demonstrated distinct differences in reasons for visitation and impressions of the site, there were no significant differences relating to suggested improvements to the site. This may be because the focus of repeat visitor respondents was on enabling family and friends to experience the site such that the site experience itself was personally less important. Alternately, people who have chosen to return to the TTW site may be happy with the way in which the site is designed and presented while their counterparts are less likely to return. That is, repeat visitors are willing to show the site to others as they consider it to be a good experience and generally did not significantly differ from the rest of the population in terms of suggested improvements.

4.1.5 Preliminary survey conclusion

The singular experiential nature of the TTW site coupled with a low intensity of interpretation appeared to cater mainly for first time visitors rather than repeat visitors. Repeat visitors already acquainted with the site appear to seek other sources of inspiration. This may be in the form of social interaction, that is, witnessing the reaction of first time visitors accompanied to the site. As the TTW site offers a predominantly exploration, observation and learning experience of the forest, social aspects form a secondary function centred on these activities. Alternately, repeat visitors appear to seek inspiration through concentrating on the natural surroundings, in which case the built aspects of the TTW site are redundant as an enriching aspect of the attraction.

The common suggestion by respondents that more information was needed at the site (mainly in the form of interpretive signs) relates directly to the low key approach to interpretation adopted by the management agency. Respondents were apparently struck by the minimalist interpretation with comments suggesting that a higher intensity than

provided at the TTW site was preferred. This finding formed the basis for the sign trial during the principal survey period. The results of addition of more signs along the TTW structure itself are presented in section 4.6.

The most common responses to the open ended preliminary survey questions provided a guide for the construction of the principal survey multiple choice options. As the principal survey focussed on the site specific influences on respondents, only site specific responses in the preliminary survey were used to guide provision of multiple choice options. For example, main reasons given for visiting the site included responses referring to the TTW structure and trees, which were included in the multiple choice version of this question in the principal survey. However, the response in the preliminary survey also included references to recommendations by friends or tourism agencies, advertisements and other non-site specific reasons. These were not included in the multiple choice options. A similar approach was used for other aspects of the principal survey. The results are presented in the following section.

4.2 Principal Survey

The intent of the principal survey was to assess whether the site experience measurably influenced attitudes and knowledge of respondents experiencing a low intensity of interpretation. There was no intent of generalising the data to make conclusions about the impacts of the site on the whole visitor population. Thus, a statistically viable number of responses were collected for comparative analysis of survey participants rather than a representative sample of the visitor population. This is also discussed in the methodology chapter's limitations section 3.9.

The principal survey was carried out in January, February and December of 2001 and in March 2002. Approximately 20 to 30 paired surveys were collected per day depending on the number of visitors to the site and their willingness to participate. While the site opened at 9am, visitors tended to start arriving at approximately 10am and waning at about 2pm. This meant that most data were collected between 10am and 2-3pm each day. In all, 443 individuals were approached with a total of 261 paired surveys completed by visitors to the TTW site. The refusal rate was 41% of those approached. A further 108 post-visit only surveys were completed to test for any reactivity bias resulting from the paired survey method. The refusal rate for the post-visit only surveys was lower than that of the paired survey group, at 31%. This was probably owing to the

lesser time commitment required to complete a single survey after the experience rather than completing a paired survey both before and after the experience.

4.2.1 *Reactivity bias*

The possibility that the paired survey instrument itself may act as a factor in influencing visitor responses was tested by comparing the paired survey group with a post-visit only group. The results from the post-visit only survey group were compared with the paired survey completed after the experience using Mann-Whitney U tests for comparison of independent sets of ordinal data at the 0.05 significance level. The lack of any significant difference in response to the environmental attitude scale, knowledge scores and attitude to the site experience between the two groups indicated that the paired survey methodological design did not significantly influence the data. Results from comparison of environmental attitude scores, knowledge scores and attitude to the site experience scores are detailed below.

Knowledge

Knowledge scores were compared between the post-visit only group and the paired surveys completed after the site experience. The number of “correct”, “incorrect” and “don’t know” responses were compared using a Mann-Whitney U test for each. Table 4.6 details the test statistics (z score) and p values resulting from the statistical comparison of each of these scores between the two groups.

Table 4.6: Test statistics resulting from comparison of knowledge scores between post-visit only and paired surveys at the TTW site

Quiz Responses	Mann-Whitney Tests	
	$\alpha = 0.05$	
	z score	P value
Correct	-1.43	0.15
Incorrect	-1.25	0.21
Don't Know	-0.62	0.54

The lack of significant difference between the post-visit only group and paired survey knowledge scores, as indicated by all p values being greater than the 0.05 significance level of the test, indicated completion of the paired survey before experience the site did not significantly bias the knowledge quiz responses after visiting the site.

Environmental Attitude

As with the knowledge scores, environmental attitude response was tested for reactivity bias through comparison of post-visit only data and the data obtained from the paired survey completed after the site experience. Figure 4.1 details the mean responses for each group with error bars representing the standard error of the mean. The graphical representation suggests no difference between the post-visit only and paired survey data.

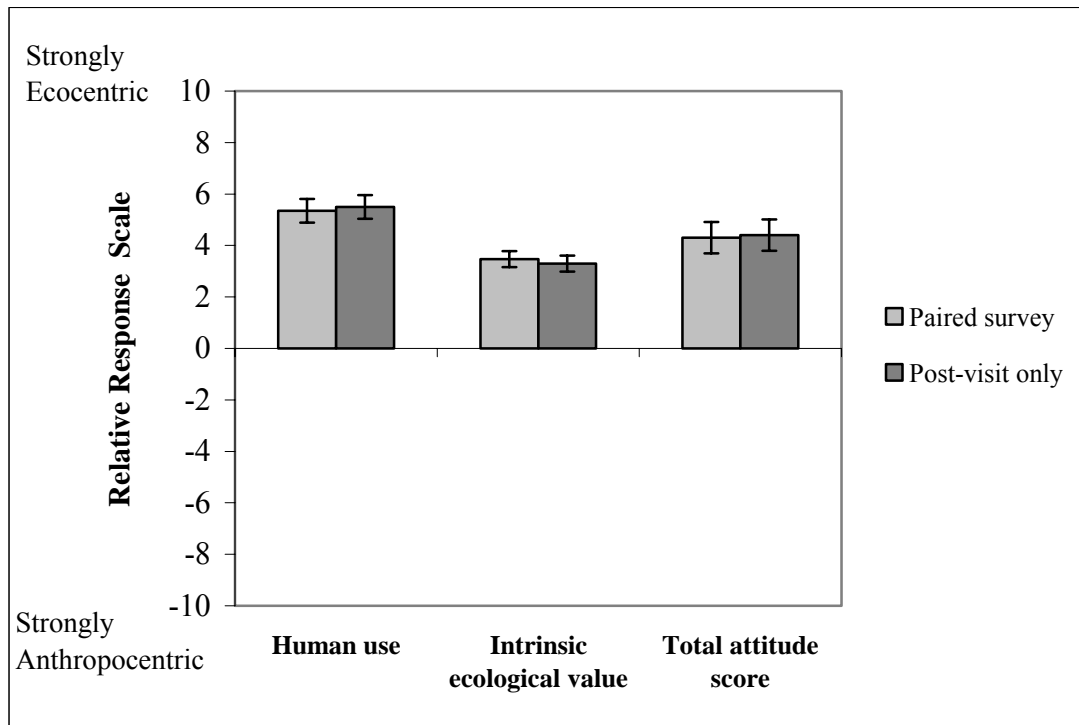


Figure 4.1: Mean environmental attitude scores as compared between the post-visit only and paired surveys after experiencing the TTW site.

Table 4.7 details the results of statistical comparison of environmental attitude data from the post-visit only and paired survey groups. Mann-Whitney U tests were used to compare the “Human use”, “Intrinsic ecological value” and “Total” scores between each group. The test statistics (z score) and p values for each of these comparisons are presented.

Table 4.7: Mann-Whitney test statistics resulting from comparison of post-visit only and paired survey environmental attitude scores after experiencing TTW site.

Environmental Attitude Scores	Mann-Whitney Tests	
	$\alpha = 0.05$	
	z score	P value
Human use	-0.77	0.44
Intrinsic eco value	-1.33	0.18
Total score	-0.52	0.60

The results from the statistical comparison of the post-visit only and paired survey groups demonstrate a lack of significant difference in the data. This is indicated by the p values being greater than the 0.05 significance level at which the statistical tests were conducted. Thus, environmental attitude responses in the paired survey completed after the site experience were not significantly influenced by the survey completed before the experience.

Attitude to Site Experience

As with the environmental attitude responses and the knowledge quiz, a statistical comparison was made in relation to the attitude to the site experience between the post-visit only group and the paired survey data completed after the site experience. Figure 4.2 illustrates the mean response of each group to the aspects included in the attitude to the site experience question with error bars representing the standard error of the mean. The graphic representation of the data suggested there was no significant difference between the post-visit only and paired survey groups.

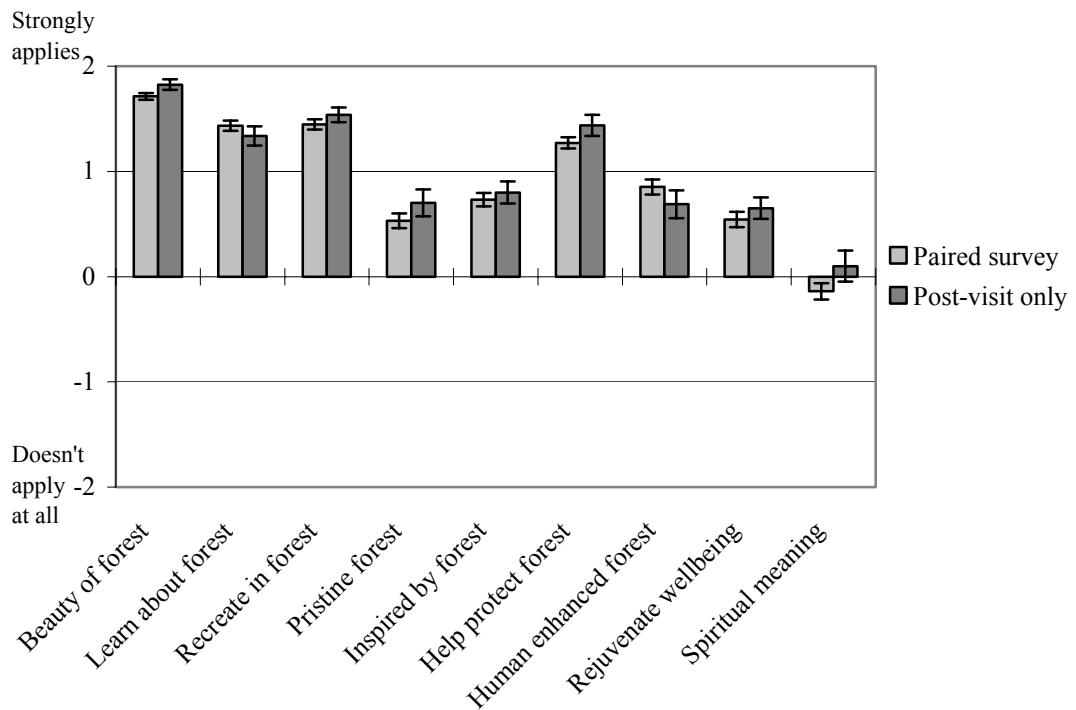


Figure 4.2: Comparison of rating of attitude to site experience between paired survey and post-visit only groups at the TTW site

Table 4.8 details the results of statistical comparison of the attitude to the site experience data from the post-visit only and paired survey groups. Mann-Whitney U tests were used to compare each of the aspects included in this component of the survey between the two groups. The test statistics (z score) and p values for each of these comparisons are presented.

Table 4.8: Mann-Whitney U test z-scores and p values of site attitude responses at the $\alpha = 0.05$ level

Site Attitude Statements	Mann-Whitney Tests $\alpha = 0.05$	
	z score	P value
Beauty of forest	-1.06	0.28
Learn about forest	-1.03	0.31
Recreate in forest	-0.50	0.62
Pristine forest	-1.17	0.24
Inspired by forest	-0.86	0.53
Help protect forest	-1.82	0.06
Human enhanced forest	-1.12	0.26
Rejuvenate wellbeing	-1.07	0.30
Spiritual meaning	-1.26	0.25

All of the p values were greater than the significance level of 0.05 at which the tests were carried out. This demonstrates that there were no significant differences in the

data as compared between the post-visit only and paired survey groups. This suggests that completion of the paired survey form before the experience of the site did not significantly influence responses the survey after experiencing the site.

The comparison of environmental attitude, knowledge and attitude to the site experience data between the post-visit only group and paired survey forms completed after the site experience confirmed that the paired survey methodology did not result in any significant reactivity bias.

4.2.2 Descriptive statistics

The following section describes the responses to the independent visitor variables. Where appropriate, significant relationships between the data are highlighted. This generally explained some of the patterns and variation in the responses to the survey questions as opposed to any on-site influences. Paired survey data relating to the impact of the site experience are dealt with in subsequent sections of this chapter that address the research questions.

Demographic Variables

Table 4.9 summarises the demographic variables of the paired survey group. Some significant relationships between these variables were evident. These in turn were found to be related to how the site influenced responses to the attitude and knowledge components of the paired survey.

Table 4.9: Summary of demographic variables of the TTW paired survey group.

Variable	No.	%	Variable	No.	%
Gender			TTW repeat visit		
female	148	56.9%	First time visit	226	86.9%
male	111	42.7%	Repeat visit	34	13.1%
<i>Not stated</i>	2	0.4%	<i>Not stated</i>	1	0.3%
Total	261	100%	Total	261	100%
Age group (yrs)			Place of residence		
<15	-	-	WA	110	42.3%
15-24	53	20.4%	Interstate	55	21.2%
25-39	93	35.8%	International	93	35.8%
40-59	70	26.9%	<i>Not stated</i>	3	0.8%
60+	43	16.5%			
<i>Not stated</i>	2	0.4%			
Total	261	100%	Total	261	100%
Visiting with			Annual natural area visitation rate		
Friends	79	30.4%	none	20	7.7%
Family	71	27.3%	1-2	63	24.2%
Partner	56	21.5%	3-6	98	37.7%
Spouse	42	16.2%	6-12	36	13.8%
Tour group	6	2.3%	>12	43	16.5%
Alone	5	1.9%	<i>Not stated</i>	1	0.2%
<i>Not stated</i>	2	0.4%			
Total	261	100%	Total	261	100%

The number of respondents in the principal survey indicating repeat visitation to the TTW site comprised 13%. As with the preliminary survey repeat visitors discussed earlier, most of the repeat visitors to the TTW were returning primarily to show the site to friends or family rather than to experience the site again for themselves. Of those

completing the survey, the 25-39 age group was most frequent followed by the 40-59 group. This result is in approximate keeping with the Australian Bureau of Statistics data where the most frequent age of visitors to national parks in 1996-97 was between 25 and 44 years of age (ABS, 2002). The absence of people less than 15 years of age was due mainly to their adult companions excluding them from completing the survey or a lack of interest as explained in the preliminary survey results. Subsequently, the <15 years age group is not fully represented.

The largest proportion of respondents resided in Western Australia while International visitors comprised the second largest group with interstate residents making up the smallest proportion. While the proportion of respondents residing in WA was approximately equal to the preliminary study results, the relative proportion of interstate and international visitors was reversed. This change was consistent with an unpublished place of residence survey carried out by CALM staff at the TTW where a rise in international visitors and decline in interstate visitors to the site was noted (Burslem, 2001).

The “visiting with” question refers to whom the respondent is accompanied by on their visit to the site and indicated the social context in which the site was experienced. Occasionally, some respondents were visiting with both friends and family and subsequently selected the most appropriate response according to who made up the majority of the group. Those visiting with family may also have partners or spouses, this category was selected only if visiting with a partner or spouse and no other family members. Most respondents were visiting with family or friends while those visiting with partners made up the significant remainder of the respondents. This was similar to the TTW preliminary survey results discussed previously. As with the preliminary survey, the tour group category in the principal survey may be under represented as strict time constraints limited the opportunities for completion of surveys before tour buses departed.

It appeared that females in family groups were more willing to complete surveys forms than males. This was indicated by a significant relationship between social context of visit and gender using Chi-square analysis ($\chi^2 = 11.10$, $df = 5$, $p < 0.05$). Cramer's strength of association statistic indicates this to be a moderately strong relationship (Cramer's $V = 0.401$). As most visitors were family groups, and most family groups

were comprised of male and female members, the significant relationship between gender and social context suggested that female members were more likely to complete surveys than males when both were given the opportunity.

Visitors were asked to indicate the average number of separate trips they take from home to visit natural areas in an average calendar year (January to December). Having a majority of survey respondents who indicated some level of regular natural area visitation was to be expected when surveying at a natural area attraction. Of interest is the proportion of visitors who indicated they do not usually visit natural areas (8%) but have chosen to visit the TTW site. This group represents a section of the community who are not usually exposed to interpretive messages in the specific context of a natural area experience. The high profile nature of the TTW site coupled with the relative ease of access may be a key factor in attracting those not normally associated with natural area attractions.

4.2.3 Reason for visitation

Visitors were presented with a multiple choice question presenting four reasons for visitation, derived from the preliminary survey. The options related to the most popular site characteristics indicated in the preliminary survey data, of which respondents selected any combination. As well as the four options, an “other “ response was included to allow for the opportunity for respondents to write their own specific reason if required (Table 4.10). As respondents were able to select more than one option, the total number of responses was greater than the total number of respondents. The percentages represent the proportion of the actual number of survey participants (n=261).

Table 4.10: Main reasons indicated for visit to TTW Site by principal survey participants.

Reason Given for Visitation	No.	%
To experience TTW	195	74.7%
To experience trees/nature	138	52.9%
To show TTW to others	25	9.6%
To show trees/nature to others	16	6.1%
Other reasons	8	3.1%
Not Stated	-	-
Total	382	146%

When prompted to nominate aspects of the site in relation to reasons for visitation, most respondents indicated that the TTW structure was the primary reason. Second to this was the large trees or other natural characteristics of the site. This suggested that the TTW structure itself functioned as the primary feature attracting respondents while the forest formed a significant but secondary aspect amongst respondents. The “Other reasons” category included responses such as “just passing through”; “something to do” or “I was in the area” and suggested an opportunistic visit perhaps out of curiosity rather than being attracted by particular specific features of the site.

4.2.4 Interpretive media used by TTW respondents

A multiple choice question was used to ascertain what interpretive media respondents used while at the site (Table 4.11). Selection was made from an inventory of the interpretive media sources provided at the site with an “other” option of adding their own response if desired. The “other” category includes travel guide publications such as the *Lonely Planet* and *Let’s Go...* that have entries about the TTW site in them. Respondents were able to select as many options as they deemed appropriate in the context of their experience of the TTW site. This meant that the number and percentages of responses add up to more than 100% of the number of survey participants (n=261).

Table 4.11: Principal survey interpretive media types used by respondents at the TTW site

Medium	No.	%
Trail-side signs	203	78.1%
Information display	151	58.1%
Sales staff	24	9.2%
Pamphlets	22	8.5%
None	8	3.1%
Guide	7	2.7%
Other	3	1.2%
<i>Not stated</i>	-	-
Total	418	160.1%

Most respondents indicated they used the trail-side signs available at the site while slightly less indicated use of the information displays. Other sources of information were used in a relatively minor way while a small portion of respondents indicated they did not use any information sources while at the site. The high proportion of information display and trail-side sign use reflects the low key approach to communication adopted by the site. Text based signs and displays were the major medium used for interpretation at the site.

4.2.5 Walk trail participation

Activities at the TTW site were primarily divided into the two distinct walk trails, the TTW and the Ancient Empire Walk (AEW). While visitors were also given the opportunity to participate in an “Under the TTW Walk”, none of the respondents indicated involvement in this activity. Table 4.12 illustrates the proportions of respondents in each category.

Table 4.12: Activities undertaken by respondents while at the TTW site

Activity	No.	%
TTW & AEW	210	80.8%
TTW only	43	16.5%
AEW only	5	1.9%
<i>Not stated</i>	3	<i>1.1%</i>
Total	261	100%

The vast majority of respondents indicated they experienced both the TTW and the AEW (“TTW & AEW”) while a significant number only experienced the TTW and not the AEW (“TTW only”). Few respondents indicated experiencing the AEW and not the TTW (“AEW only”). This may be a function of the TTW being the central attraction at the site, as indicated by the dominance of the structure in the main reason given for visitation. Anecdotal evidence suggested respondents indicating use of the AEW only were generally individuals who were afraid of heights and were visiting with others who wished to experience the TTW.

It is interesting to note that the AEW has no entry fee while the TTW does but the data indicates that the majority of respondents were willing to pay for the TTW experience rather than partake in the free AEW experience alone. The significance of paying for an experience lies in the meaning a natural area visitor draws from the site as discussed in the introduction chapter section 1.2. That is, paying visitors may have higher expectations with regard to the experience and may also tend to treat the natural area as a commodity rather than something to connect with and derive personal meaning from.

4.3 Influence of Low Intensity Interpretation on Attitudes and Knowledge

The TTW site experience, with a low intensity of interpretation, appeared to have a significant influence on respondent attitudes and knowledge. Environmental attitude of paired survey participants significantly changed with regards to increased agreement with ecocentric concepts in the NEP scale. Knowledge about the forest was also significantly increased after the site experience. In terms of the attitude toward the site as a natural area experience, there were significant changes in response to some of the statements; either becoming more applicable to the respondent’s experience or in some cases less applicable.

Several independent variables were significantly associated with environmental attitude and attitudes toward the site experience. Variables such as gender and past experience in natural areas were significantly related to the more emotive perceptions of the site experience as well as anthropocentric components of environmental attitude. There appeared to be no relationship between the various respondent variables and knowledge or change in knowledge. There was also no difference between repeat and first time visitor responses to these aspects. These variables are discussed in turn.

4.3.1 Environmental attitude

Paired survey participants demonstrated predominantly ecocentric attitude responses to the human use and intrinsic ecological value components of the attitude scale. Consequently, the overall environmental attitude was on average, ecocentric. Figure 4.3 illustrates the respective mean responses for the human use and intrinsic ecological value statements as well as the total environmental attitude score. The error bars represent the standard error of the mean. Respondents were significantly more ecocentric in their response to the human use statements than the intrinsic ecological value statements in the survey responses before experiencing the site ($z = -8.68$, $p < 0.01$). That is, while respondents appeared to disagree with unabated use of the forest purely for human benefit, they were less inclined to view the forest solely for its intrinsic value.

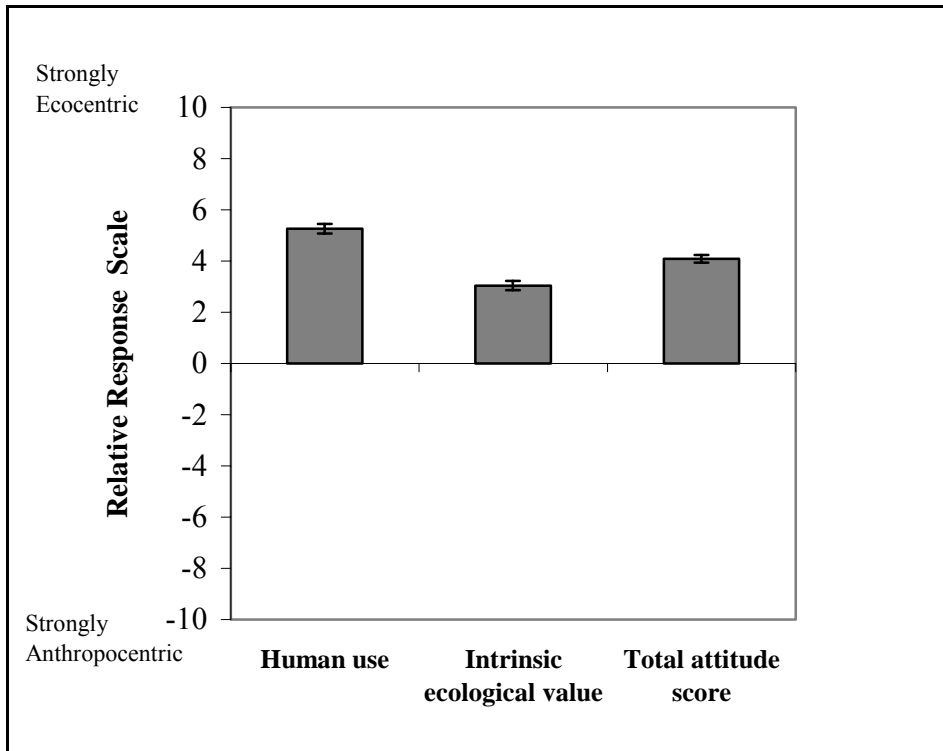


Figure 4.3: Mean paired survey response to environmental attitude statements before experiencing the TTW site

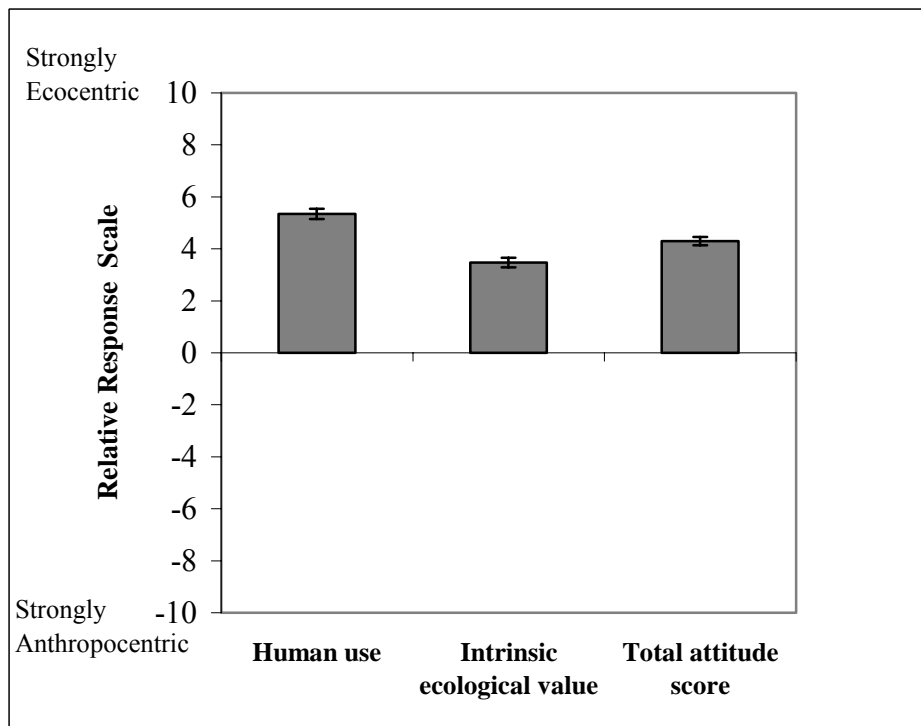


Figure 4.4: Mean response to environmental attitude statements after experiencing the TTW site.

Paired tests comparing the mean responses before and after experiencing the TTW site, using Wilcoxon signed ranks at the $\alpha = 0.05$ level, indicated significant mean change in the attitude response to the intrinsic ecological value statements in the responses after the site experience ($z = -2.03$; $p < 0.05$). However, there was no significant change in the attitude response to the human use statements or in the total attitude score. This suggested that the TTW site influenced the respondents environmental attitude in terms of intrinsic ecological value but did not influence attitudes towards the human use of the forest.

The paired survey data enabled calculation of the change between individual pre and post visit responses, allowing analysis of mean change in response based on the mean individual response difference between the paired survey forms. This provided a more accurate assessment of the change in attitude response as it takes into account contrary changes masked by the overall mean differences. Figure 4.5 illustrates the mean change in individual environmental attitude responses.

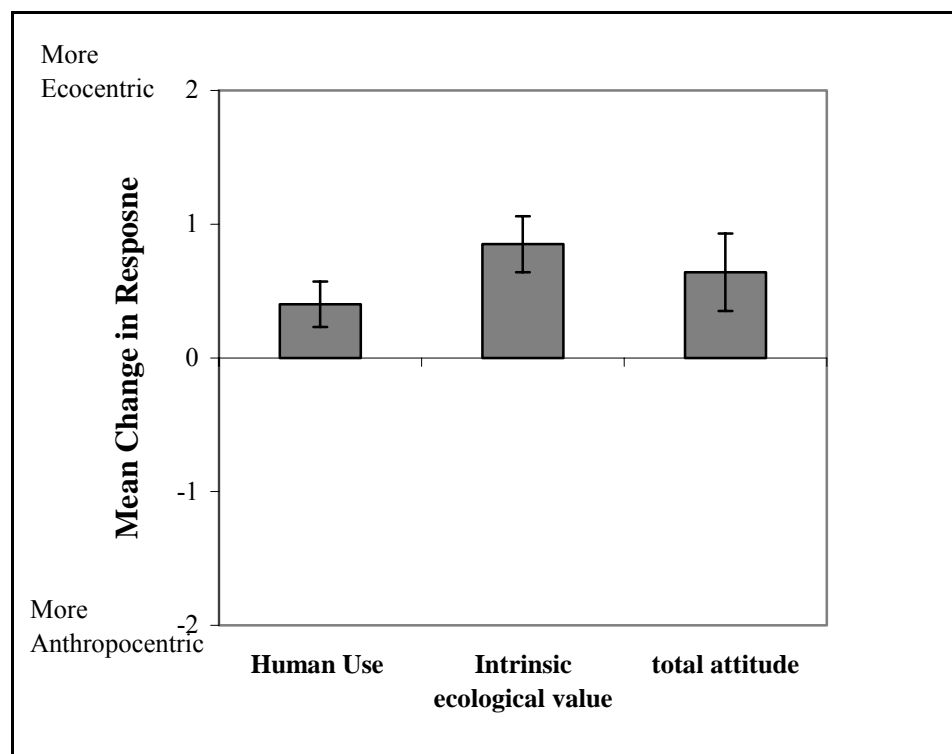


Figure 4.5: Mean individually calculated change in response to attitude statements at the TTW site

This data suggested that responses to the human use, intrinsic ecological value statements underwent an ecocentric shift after the TTW site experience as did the total environmental attitude. Analysis using a one sample Kolmogorov-Smirnov test

demonstrated that the distributions for the data were normal enabling one sample T-tests to be conducted to assess whether the changes were actually significant (Table 4.13). A single sample T-test (using 0 as the test value) was used to ascertain whether the changes for each of “Intrinsic ecological value”, “Human use” and “Total” environmental attitude score were significantly greater than 0.

Table 4.13: Results of K-S test for normal distribution and a 1 sample T-test of change in environmental attitude response after experiencing the TTW site.

Attitude Statements	1 sample K-S		1 sample T-test (test value = 0)	
	K-S z value	p value	t value	p value
Human Use	1.14	0.16	-2.35	0.03
Intrinsic Ecological Value	1.15	0.14	-3.99	0.000
Total Attitude Score	1.21	0.11	-2.18	0.02

The results of the T-test indicate that the individually calculated change in scores for the “Human use”, “Intrinsic ecological value” and “Total” environmental attitude scores were significantly greater than zero. Thus it appears that respondents had an ecocentric shift in all three aspects of environmental attitude immediately after experiencing the TTW site.

Past studies have suggested that the most effective means of altering attitudes is to specifically target messages and media at identifiable sub groups within the visitor population (McArthur and Hall, 1993b; Magill, 1995; Ballantyne et al, 1998). The media used at the TTW site is low intensity, fairly generic and does not appear to be targeting anyone in particular. Field & Gough (1998) mentioned that the low intensity use of communication media such as signs and guides allows the TTW site to ‘speak’ for itself. In other words, respondents are encouraged to interact with the site and its natural surroundings in their own terms without the external influence of management attitudes and values inevitably expressed through on-site communicative media. Like specifically targeted communication media, minimal or prudent use of media may also effectively work to encourage exploration, discovery and ultimately a personal interaction with the site (Roggenbuck, 1992; Bramwell and Lane, 1993).

The shift in respondent attitudes towards a greater empathy for the intrinsic value of the forest seems to support the minimal use of media promoted by Roggenbuck (1992),

Bramwell and Lane (1993) and Howard (1998). Therefore, while Ballantyne (1998) and Uzzell (1998) suggest low intensity use of on-site interpretation may raise questions relating to the potential for influencing visitors, this does not appear to be the case in the context of the shift in ecocentric attitudes toward the natural environment at this site.

The following sections examine the respondent variables found to be significantly related to environmental attitude response. Gender appeared to relate to responses to ecocentric concepts while past experience in natural areas related to responses to anthropocentric concepts. Analysis also revealed what appeared to be significant links between aspects of the environmental attitude score and motivation for visitation. Combined analysis reveals no significant interactions between the various respondent variables.

Gender and Environmental Attitude

There was no significant difference between responses of males and females to the environmental attitude statements before experiencing the site (Figure 4.6). Both responded significantly more ecocentrically to the human use statements of attitude than the intrinsic ecological value statements.

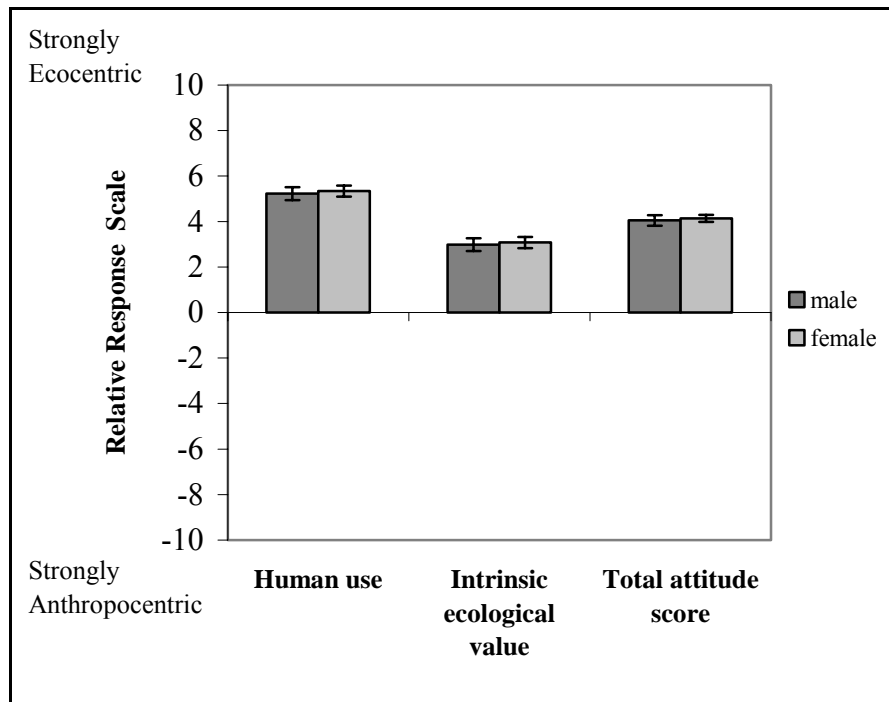


Figure 4.6: Mean paired survey response to environmental attitude statements before experiencing the TTW site according to gender.

Figure 4.7 illustrates that females had a significantly more ecocentric response to the intrinsic ecological value statements than males after the TTW site experience ($z = -2.66, p < 0.01$). However, both males and females demonstrated a significantly greater ecocentric response to the human use statements than the intrinsic ecological value statements ($z = -7.97, p < 0.01$). As the responses before the site experience showed no significant difference between male and females, responses of males and females after the site experience appear to be a result of differing influences of the site on the respective genders.

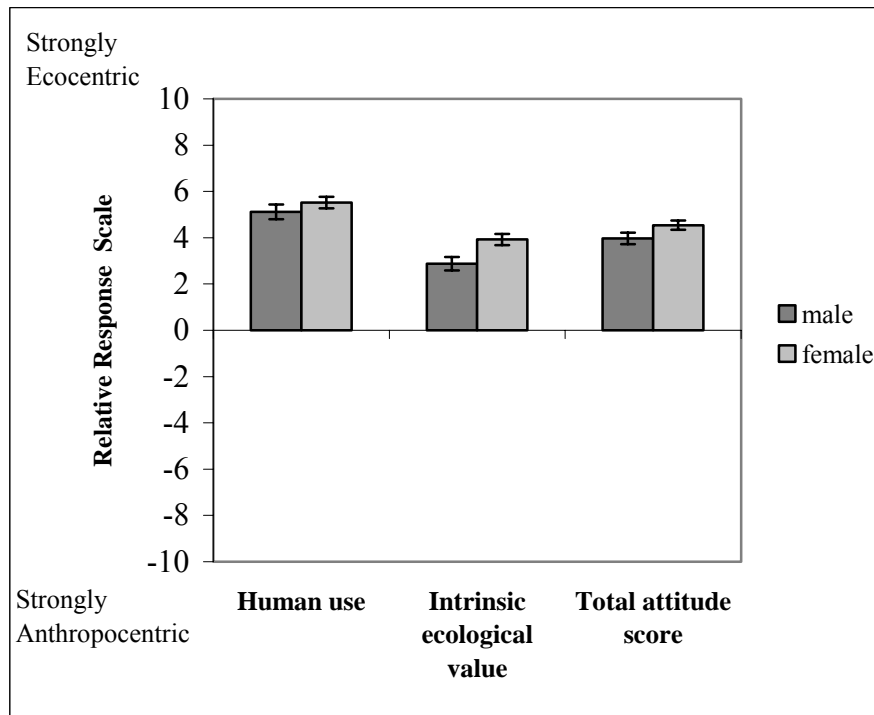


Figure 4.7: Mean paired survey response to environmental attitude statements after the site experience according to gender.

Figure 4.8 illustrates females had a significantly greater change toward the ecocentric end of the attitude scale in response to the “Intrinsic ecological value” statements and the total attitude scores than did males (intrinsic value change $z = -2.07$; total attitude change $z = -2.16$, $p < 0.05$). Male respondents exhibited no significant change in response after experiencing the site. This suggested that females were more receptive to appreciation of the intrinsic value of the forest as a natural environment during the TTW site experience.

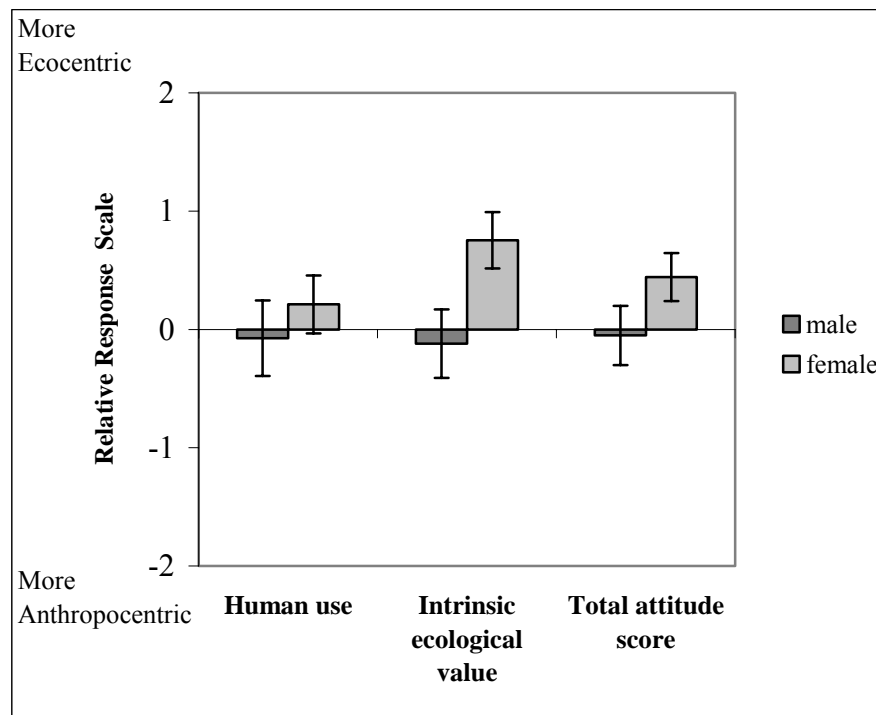


Figure 4.8: Change in response to environmental attitude statements according to gender.

The gender attitude results may be related to social influences where females had a greater tendency than males to empathise with, or be more receptive to, ecological issues. As intimated in the preliminary survey results, past research has identified a relationship between socio-demographics and environmental attitudes. This work indicated that the tendency of females to have a greater empathy toward the natural environment than males is a socially learned behaviour (Dunlap and Hefferenan, 1975; Arcury, 1990). A greater willingness to express emotional feelings on the part of females may explain the difference with males who are less likely to admit to ‘effeminate’ views such as empathy for natural settings (Xu & Bengston, 1997). The lack of significant difference in response to the anthropocentric, or masculine, view of nature highlights this point.

Several possibilities arise from these considerations; firstly, males may have altered their perceptions of the intrinsic value of nature expressed in the ecocentric statements but were unable or unwilling to admit to such feelings. Or secondly, males may be rendered impermeable to the appreciation of nature, or feminine insights, due to social conditioning cancelling such responses. On the other hand, females may be more prone to social desirability bias and express greater concern for the natural environment based on the premise that this is ‘the right answer’.

Natural Area Visitation and Environmental Attitude

The extent of natural area visitation as indicated by survey participants was found to be significantly related to the environmental attitude response. More specifically, the attitude response to the human use statements before experiencing the TTW site was significantly related to frequency of natural area visitation ($\chi^2 = 11.97, p < 0.01$).

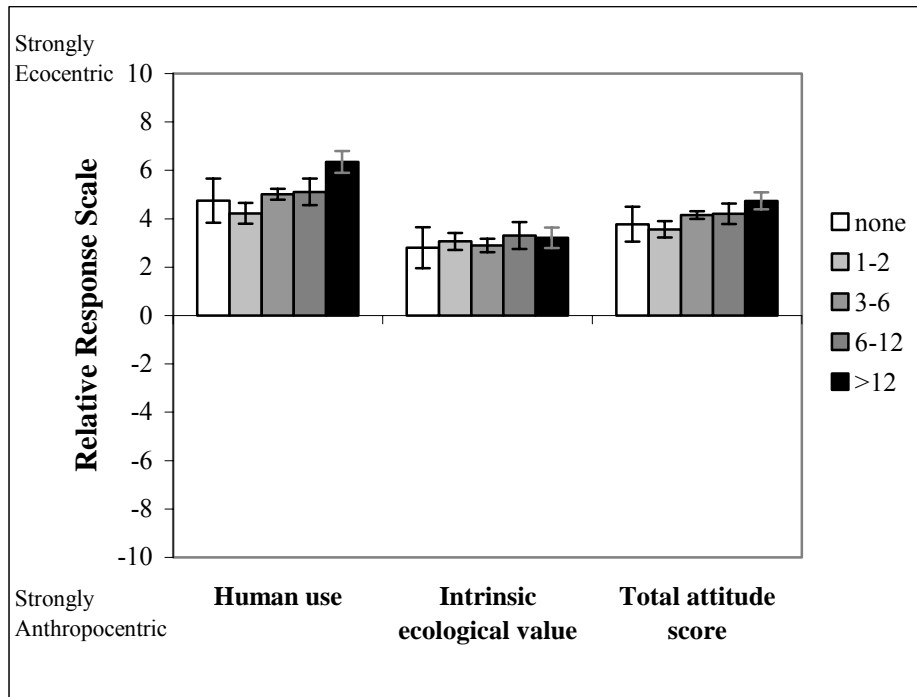


Figure 4.9: Response to environmental attitude statements before experiencing the TTW site according to annual natural area visitation frequency.

The primary significant difference relates to the “>12” visitation group demonstrating a significantly greater ecocentric response to the human use attitude statements as compared with the remaining groups (Figure 4.9). Natural area visitation frequency groups below the “>12” category were not significantly different to the “none” group in response to the human use statements. There was no significant difference between any of the groups in the pre-visit response to the intrinsic ecological value attitude statements or the total attitude scores.

The response of the “>12” natural area visitation group to the human use statements was also significantly more ecocentric than the remaining groups after the experience of the site ($\chi^2 = 14.95, p < 0.01$). There was no significant difference between the groups

in terms of the intrinsic ecological value statements or the total attitude score. This result mirrors the response before experiencing the site (Figure 4.10).

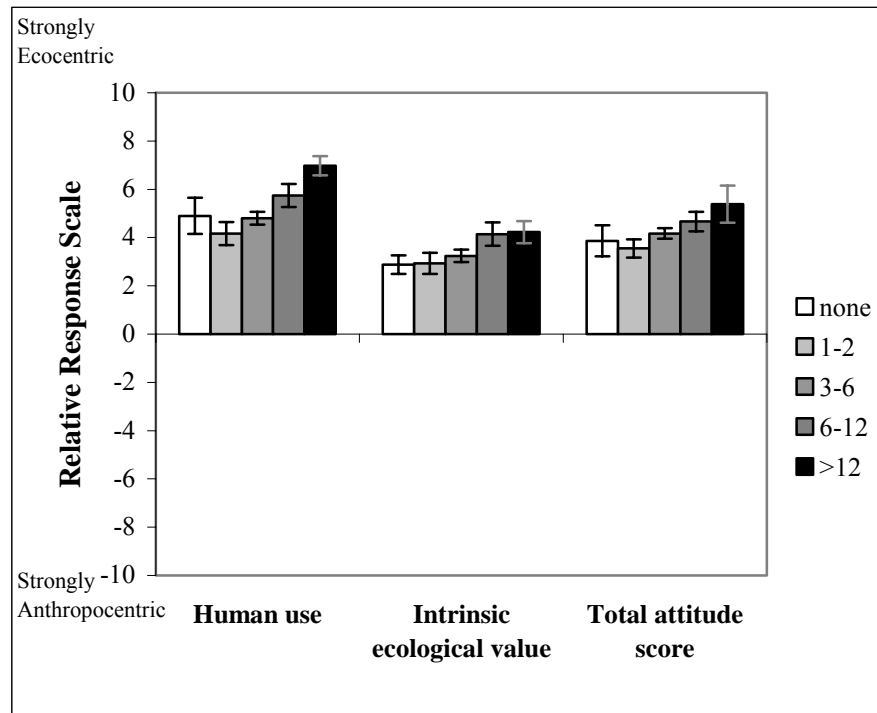


Figure 4.10: Post visit response to environmental attitude statements according to annual frequency of natural area visitation.

In terms of change in response to the environmental attitude statements, the “6-12” and “>12” groups demonstrated a significant ecocentric shift in response to the human use and intrinsic ecological value statements after experiencing the site while the remaining groups had no significant alteration (Figure 4.11). However, statistical examination of the magnitude of change in response reveals no significant difference between the groups mainly due to the variation in response within each group as indicated by the error bars. This may be a product of the division of the survey sample into group too small for statistical relationships to be discerned.

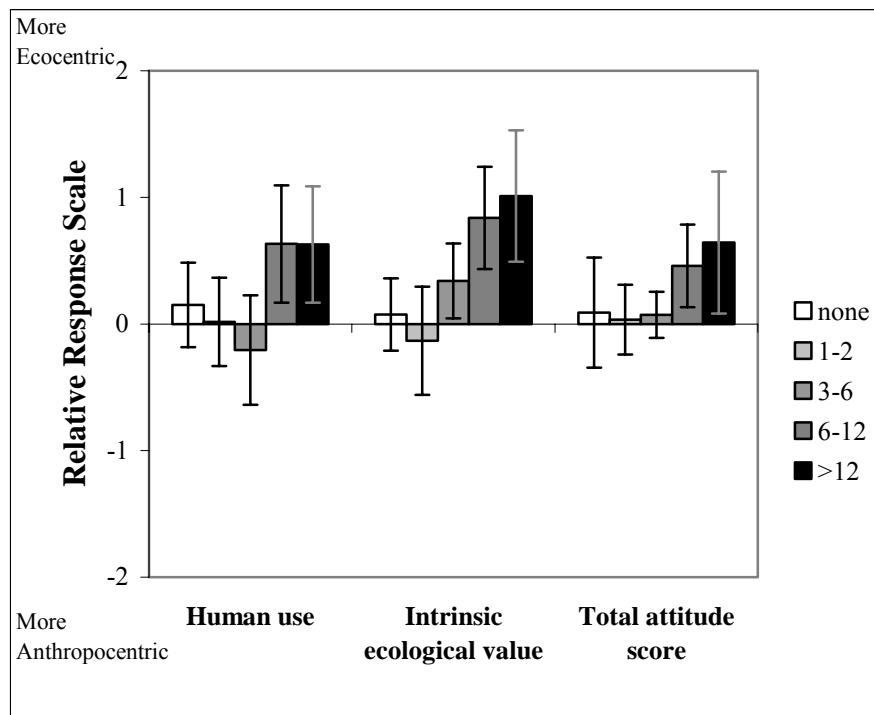


Figure 4.11: Change in response to TTW survey environmental attitude statements according to natural area visitation frequency.

Respondents indicating a greater frequency of annual natural area visitation must have more accumulated experience in natural areas than those indicating a lesser frequency. In order for individuals to voluntarily and repeatedly return to experience natural environments for recreational purposes, as indicated by the annual visitation frequency, those individuals must view such experiences in a positive light (Bixler & Floyd, 1997; Oppermann, 1998). Attitudes toward a given environment are influenced by past experiences with that environment (Maslow, 1968; McGuire, 1985). Thus, it may be assumed that accumulated positive experience in natural areas may have a significant positive influence on attitudes toward the natural environment (Hammit, 1981; Fakeye & Crompton, 1991; McKercher, 1996). Positive attitudes toward the natural environment manifest as an ecocentric attitude (Metzger & McEwen, 1999). Therefore, the members of the more frequent natural area visitation groups are more likely to have stronger ecocentric leanings in their attitudes relative to the less frequent visitation groups.

Analysis of the overall environmental attitude data suggests that respondents underwent a significant ecocentric shift in attitudes toward the intrinsic ecological value of the forest. However, there was no change in attitude toward the human use statements of attitude. When broken down into natural area visitation frequency groups, there appears

to be no significant change in attitude responses in any of the groups. The lack of significant difference between the groups may be a function of a small sample size resulting in relatively large variation in responses obscuring difference between the groups. This is suggested by the relatively large standard error of the mean values in relation to the magnitude of change.

4.3.2 Knowledge

The paired survey measured the knowledge of respondents before experiencing the TTW site. That is, the knowledge of the natural surroundings at the TTW site that respondents brought with them (Figure 4.12). Respondents possessed a significantly greater level of correct knowledge on arrival at the site as compared with the incorrect or don't know responses (incorrect $z = -11.18$; don't know $z = -8.34$, $p < 0.01$). Similarly, the number of incorrect responses was significantly greater than the number of don't know responses ($z = -5.95$, $p < 0.01$).

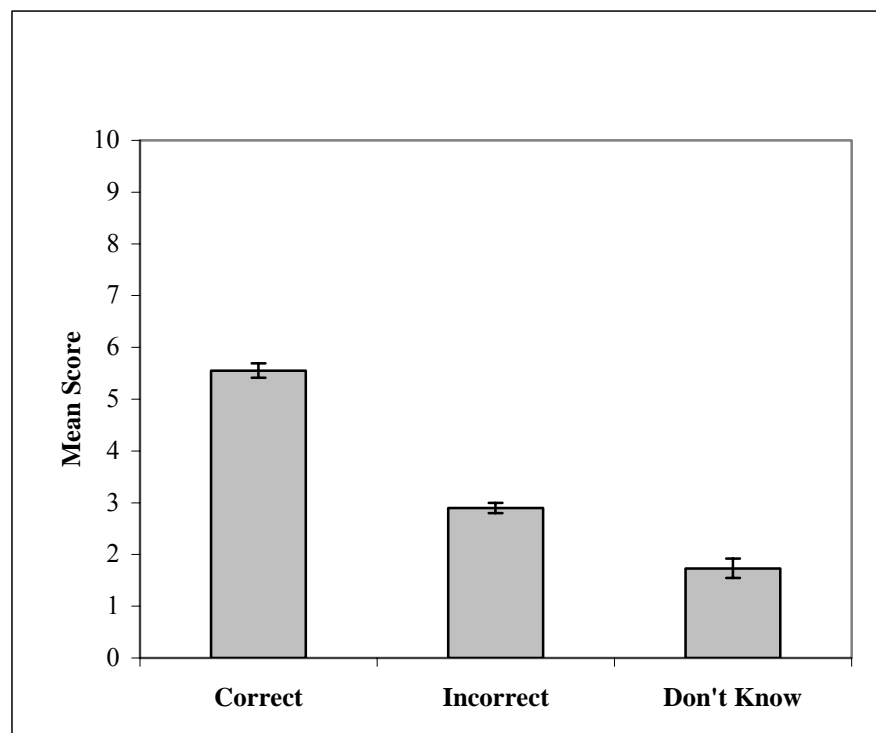


Figure 4.12: Mean knowledge scores of TTW survey respondents before experiencing the site.

The knowledge scores after experiencing the TTW site revealed a similar pattern to those before experiencing the site. The number of correct responses was significantly greater than the number of incorrect or “don't know” responses ($z = -3.34$, $p < 0.001$).

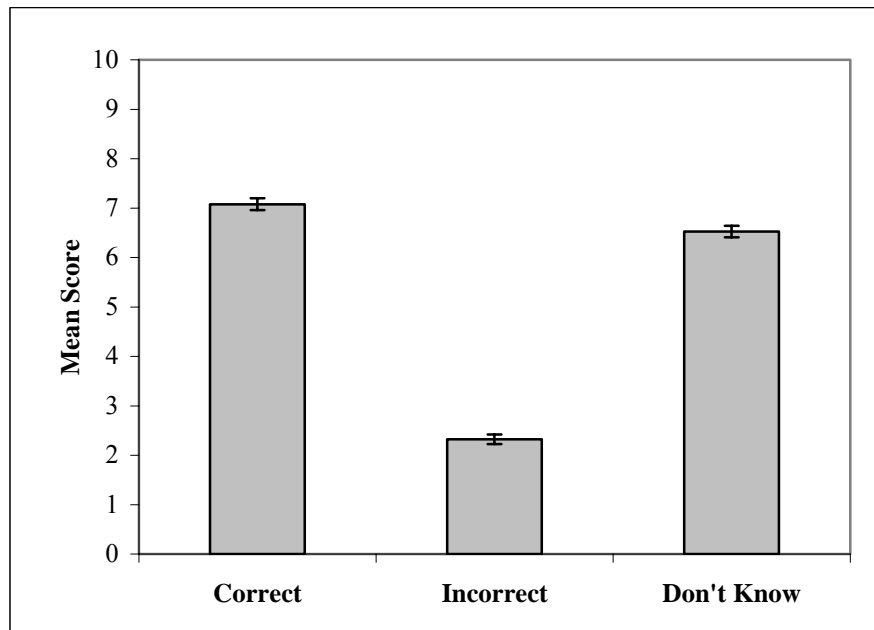


Figure 4.13: Mean knowledge scores of TTW survey respondents after experiencing the site.

The change in knowledge scores after experiencing the site saw the number of correct responses significantly increased ($z = -9.67, p < 0.01$) while the number of “don’t know” and incorrect responses significantly decreased (incorrect $z = -4.94$; don’t know $z = -6.97, p < 0.01$). There was no significant difference in the magnitude of change in the number of incorrect and don’t know responses (Figure 4.14).

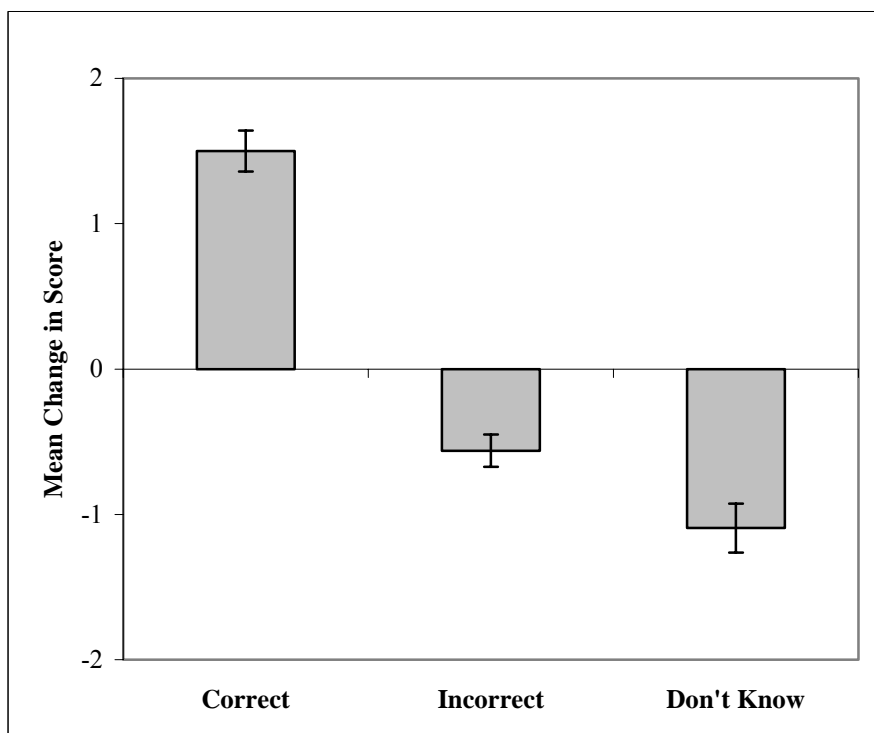


Figure 4.14: Mean change in knowledge scores after experiencing the TTW site.

The significant increase in knowledge of the respondents surveyed suggested that the low intensity of interpretation at the TTW site was successful in communicating information about the natural surroundings. This was reinforced by the post-visit only group data having no significant difference with the paired data collected after experiencing the site. That is, completing the knowledge quiz before the experience did not significantly influence the knowledge scores after the experience of the site. Thus the increased number of correct responses and decrease in incorrect and “don’t know” responses seems likely to be a result of the site experience.

There was no evidence to suggest any significant relationships between the extent of knowledge gain and the independent variables respondents brought to the site as measured in the survey. Ballantyne et al (1998) found a significant relationship between the reasons for visiting a site, subsequent activities undertaken and the receptiveness to information provision. Respondents who were interested in exploration and learning were more receptive to on-site communication than those seeking other recreational pastimes. All respondents at the TTW site were restricted to taking part in an exploration and site seeing exercise with no opportunities for alternative recreational pursuits. That is, it is a singular event site. Thus, respondents to the site generally arrived with the expectation of an experience based on exploration.

In addition to this, the main interpretive medium for daily on-site communication was through signs and temporary information displays. Text-based interpretation presents a relatively static method of information transferral that does not allow for elaboration or exploration of concepts other than what is directly provided by the medium. Therefore, all respondents were exposed to the same concepts and potential level of detail irrespective of their willingness to explore concepts further. While there was site staff available, they were employed primarily in a product sales capacity and generally did not provide information on the natural aspects of the site. Therefore, the restriction of respondent activities in combination with a low intensity interpretation approach appears to have cancelled the influence of respondents’ intrinsic variables on the extent of mean information transferral.

While the site essentially provided for a generally homogenous visitor experience in the form of exploration with minimal communication, there was scope for variation in the

exploration experience relating to the design of the respective walk trails. Depending on whether respondents chose to experience the canopy level TTW structure alone or in combination with the ground level Ancient Empire walk presented two distinctly different types of exploration experiences that manifested in a significant effect on knowledge gain. This is discussed further in section 4.4.2.

4.3.3 Attitude to the TTW site as a natural area experience

The rating of various aspects of the TTW site experience before actually experiencing the site provided an indication of the attitudes of respondents toward the site's representation of the natural area. Responses to the statements before the experience were mostly positive but there were significant differences in the magnitude of the positive responses as indicated by the Friedman test ($\chi^2 = 522.54$, $p < 0.01$). The concepts of "beauty of forest" and "learn about forest" were rated as strongly applicable indicating these to be the primary component of the experience as perceived by the respondents. "Recreate in forest", "Pristine forest"; "Inspired by forest" and "Help protect forest" were all rated moderately applicable suggesting that they are less of a priority than the beauty and learning aspects but still important. The "Human enhanced" aspect of the experience and "Rejuvenate wellbeing" were rated the least positively while "spiritual meaning" was given a neutral response indicating respondents considered these aspects to be of little relevance to their experience.

Analysis of the responses after experiencing the site revealed a significant difference with the mean response made before experiencing the site ($\chi^2 = 739.27$, $p < 0.01$). The attitude ratings after the site experience illustrate that the respondents considered the site to have provided a positive experience of the "Beauty of the forest", "Learning" and a "recreation" in the forest setting as well as an opportunity to "help protect the forest". The "human enhanced" aspect of the site was also positively rated. Being "inspired by the forest", experiencing a "pristine forest", and the "rejuvenation of well-being" were rated moderately positively but were lower on the scale than the former aspects. The "spiritual meaning" component was given a neutral rating suggesting this to be irrelevant or not an applicable part of the experience.

Change in response in the paired survey data indicated some significant alterations. There was no significant alteration in response to "beauty of forest" and "learn about forest" aspects suggesting that the site provided for this experience in accordance with

the initial high rating given by the respondent. The initially lower rated “rejuvenate well-being” aspect also remained unchanged after the experience indicating the site had no impact on this aspect of awareness. The “recreate in forest”, “help protect forest” and “human enhanced” aspects of the experience were all significantly increased in rating after the experience. The “pristine forest”, “inspired by forest” and “spiritual meaning” aspects were significantly decreased in rating.

Attitude responses to the experience of the TTW site before experiencing the site were strongly correlated with the response after experiencing the site ($r_s = 0.862$). This relates to the concept that beneficial experiences are the core product of any tourism destination and these are, in turn, determined to a large extent by the attitudes of the tourists themselves (Prentice et al, 1998). That is, the attitude individuals bring to a situation will significantly influence the nature of influence of that situation on their attitudes.

When there is no change in rating of these aspects, as indicated by the survey instrument, this does not necessarily suggest a lack of influence. For example, aesthetic beauty is an expected part of a natural area experience while, arguably, learning is also an expected component of managed natural area experiences (Moscardo, 1998; Rolston, 1998). Given that these aspects were rated strongly positively in both of the paired survey forms, with no significant alteration, suggested that respondents’ expectations were provided for through experiencing the site. Perhaps in this sense, the site may have either re-affirmed or reinforced these attitudes. Measurement of positive influences in attitude toward the site experience may be limited by a high rating in the survey before the experience as the respondent may only provide a response according to the scope offered by the rating scale.

Of interest is the significant increase in the rating of “Recreate in forest”, “Help protect forest” and “Human enhanced forest” aspects of the experience. The significant increase in the recreational component suggested the site positively influenced respondents’ attitudes toward the forest as a recreational experience. This largely appeared to be a function of the site attracting people who did not usually frequent natural areas as demonstrated by Figure 4.18.

The positive change in response to human enhanced elements and helping to protect the forest may relate to the restrictive design of the site. Respondents were primarily left with impressions of the TTW structure after their experience of the site, as indicated in the preliminary survey results. When considered in conjunction with the increased rating of appreciation of the human made aspect of the experience, it would appear that respondents considered the TTW structure had enhanced their experience of the forest. The positive increase in rating of the “help protect the forest” aspect may be related to the human enhancements at the site. Spearman’s Correlation analysis indicated a moderate relationship between ratings of these two components of the experience ($r_s = 0.41$). This represented a positive counter experiential component, to negative aspects such as restrictions on freedom of movement and crowding, associated with confinement to a relatively small area in the forest. Evison (1981) suggested that the physical appearance of a site, in terms of ecological and physical quality, may be as equally important in influencing visitor attitudes toward their experience of natural areas as other forms of communication. As the hardened design of the TTW site has essentially reduced visitor impacts on the Tingle Forest to negligible levels (Blight, 1999), this appeared to function as a positive component of the experience.

The neutral response to the spiritual component of the site experience may be explained by social factors. A study by Xu and Bengston (1997) of national forest values in the U.S. found aesthetic and recreational perceptions of forest interaction were very positive while appreciation of spiritual value in forests received a low response. Similarly, a mail and telephone survey of Tasmanian residents regarding attitudes relating to forests found that while spirituality received some positive responses, aesthetic, cognitive and personal well-being aspects were rated much higher (Hamilton-Smith, 1998). These results are comparable to those obtained in the present study. While Hamilton-Smith (1998) does not discuss the reason for the lower response to spirituality in any detail, Xu and Bengston (1997) attribute the ambiguity towards spirituality to a lack of understanding or misinterpretation of the concept as well as an unwillingness to admit to feelings deemed unsavoury or effeminate in the broader social context. Religious authors such as Collins (1995) and Spong (1998) discuss the increasing alienation of Western Society from organized mainstream religion and its traditional view of spirituality. They suggest that this has resulted in the formation of neutral or negative perceptions of spirituality in the context of such institutions and traditions amongst the current general population. As with the study by Xu and Bengston (1997) this may be a

possible explanation for the generally negative reaction to the “spiritual meaning from nature” statement through misinterpretation of spirituality as having a generic religious meaning. However, as data on religious affiliation, involvement and views were not collected as part of the visitor survey, this hypothesis is pure conjecture.

The significant positive relationship between responses to “rejuvenate well-being” and “spiritual meaning” may provide some explanation of the responses in this survey. The wording of the “rejuvenate wellbeing” statement refers directly to physical and emotional wholeness or health. As the responses to this statement were significantly positively correlated with the “spiritual” concept it seems evident that the spiritual meaning statement was perhaps associated, by respondents, with emotional connection with the environment more than with religious symbolism. Thus, low response to both concepts may be a result of an inability or unwillingness to admit to hold such attitudes toward the forest environment

While the TTW site appeared to positively reflect aesthetic, cognitive and recreational components of respondent experience of the forest, response to the spiritual and well-being aspects may highlight a difference between the study site and a true wilderness experience. Collins (1995) discussed the intrinsic spirituality of the natural world that forms a subconscious motivating link between humans; nature and the deeper need to emotionally connect with natural environments. The spiritual and wellbeing component of an experience is considered to be of a higher order of fulfilment than the aesthetic and learning dimensions (Maslow, 1968). While these aspects may rely partly on the attitudes and perceptions of the individual, the environmental context also plays a significant role (Maslow, 1968; Manning et al, 1999; Crick-Furman & Prentice, 2000). Collins (1995) mentioned that experiencing isolated wilderness (preferably in a solitary fashion) is necessary in order to truly achieve the spiritual dimension of interaction with nature. The low rating of the spiritual aspect may reflect an inability of developed natural areas such as the TTW site to provide for such an experience. On the other hand, the need for isolated natural area experiences in the absence of built infrastructure would suggest that interpretation is unlikely to influence this aspect of the visitor experience.

As with environmental attitude, gender and frequency of natural area appeared to have a key influence on awareness and appreciation. The main significance of gender

manifested in the response to rejuvenation of wellbeing and spirituality. This corresponds with the greater likelihood of females expressing personal emotions as compared with males. A key influence of the frequency of natural area visitation was the perception of the TTW as a positive recreational experience. Respondents with less experience in natural areas were influenced by the site experience to significantly increase their rating of this component.

Gender and Site Experience

Mann-Whitney U tests revealed female and male respondents differed significantly in their response to certain components of the site experience before actually experiencing the site (Figure 4.15). Females responded significantly more positively than males to the “spiritual meaning” component ($z = -2.56, p < 0.02$). Females also rated the “rejuvenate well-being” component of the experience significantly more applicable ($z = -2.01, p < 0.05$). There were no significant differences between gender responses to the remaining site experience aspects prior to visitation.

These results mirror suggestions by Xu & Bengston (1997) regarding the male social stigma attached to admission of emotional responses to natural environments. The higher female rating of the spiritual and rejuvenate wellbeing components suggests males are unwilling or unable to admit to perceived effeminate responses to the expected experience. The differences in response to the spirituality and well-being aspects are highlighted by the lack of gender difference in response to the other aspects that may be deemed less emotional or feminine.

Attitude response after the experience illustrated in Figure 4.16 revealed that females again rated the spirituality aspect significantly higher than did the male respondents ($z = -3.65, p < 0.01$). Females also rated the well-being aspect significantly more positively than did males ($z = -2.27, p < 0.05$).

As with spirituality, this indicated the difference in response between males and females was due to social factors rather than the impact of the site experience. Thus, taking into account the gender socialisation factor influencing response to both spirituality and well-being, the TTW appeared not to positively influence this aspect of the forest experience.

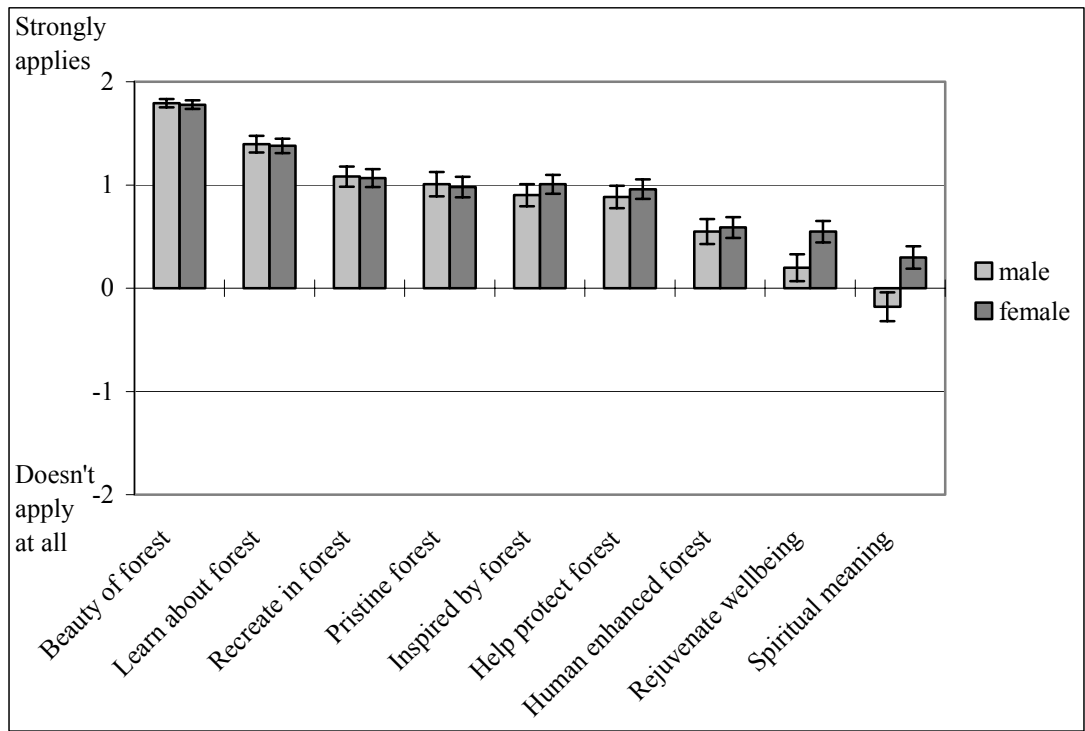


Figure 4.15: Mean attitude response to the TTW site before experiencing the site according to gender.

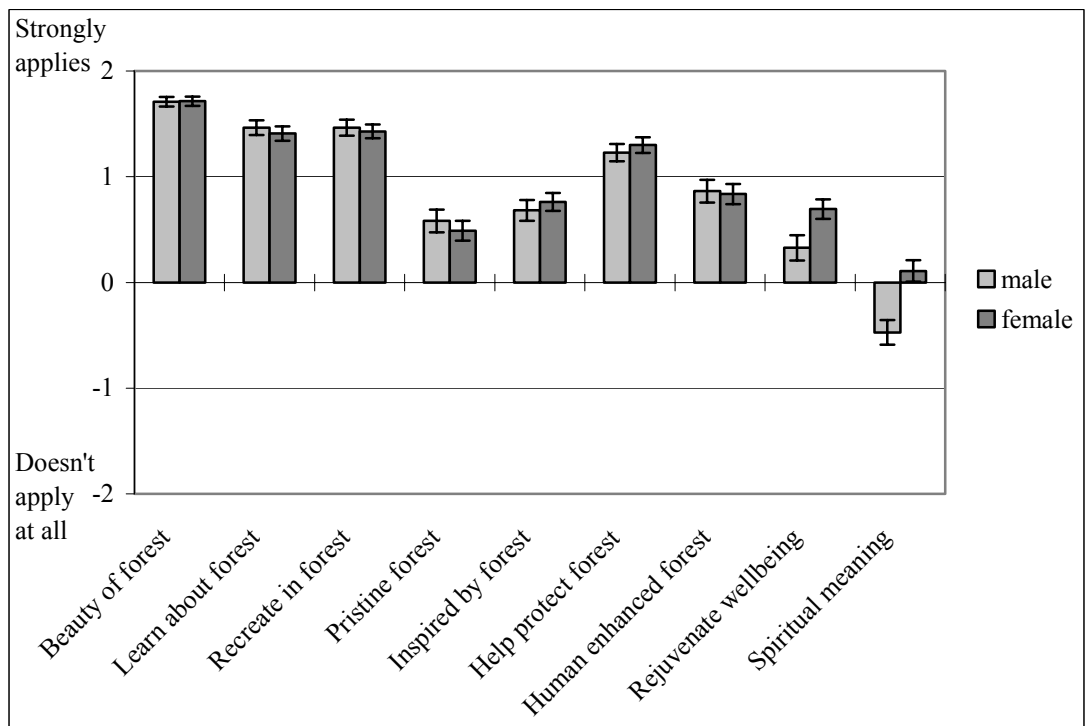


Figure 4.16: Mean attitude response to the TTW site after experiencing the site according to gender.

Examination of the magnitude of change in response to the various aspects of the site experience indicated no significant gender relationship. Males and females demonstrated similar changes in rating of the respective statements. This suggested the differences evident in the post visit survey are a result of socialisation factors as opposed to interaction between gender and the site (Figure 4.17).

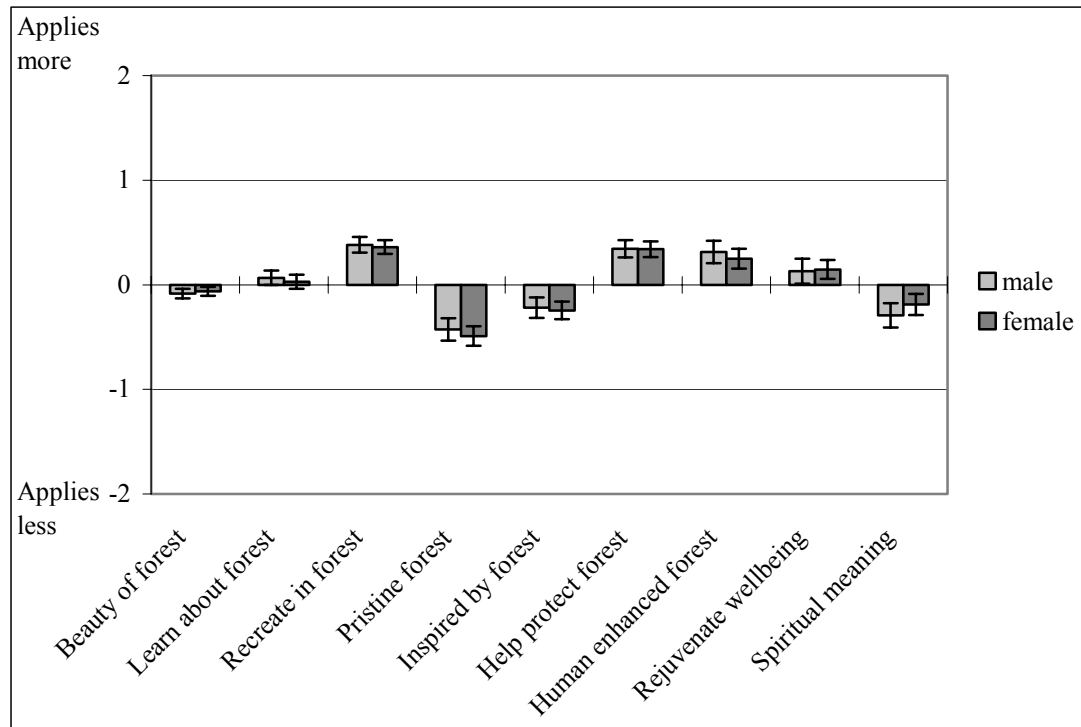


Figure 4.17: Change in attitude to TTW site according to gender.

Frequency of natural area visitation and site experience

Significant differences in the survey response before experiencing the TTW site were evident between the various categories of natural area visitation (Figure 4.18). Ratings of “recreate in forest”; “inspired by forest”; “rejuvenate well-being” and “spiritual meaning” were all significantly different. In all respective cases, a significant difference occurred between the responses of the natural area visitation groups and the “none” group but not between the groups visiting natural areas.

Natural area visitation groups rated the “recreate in nature” aspect positively while the “none” group responded neutrally ($\chi^2 = 16.05$, $df = 4$, $p < 0.01$). The natural area visitation groups rated the “inspired by forest” aspect significantly more positively than the “none” group before experiencing the site ($\chi^2 = 9.14$, $df = 4$, $p < 0.05$). The “none”

group responded negatively to the “rejuvenate well-being” aspect while natural area visitation groups were moderately positive ($\chi^2 = 10.81$, $df = 4$, $p < 0.05$).

The response pattern in relation to the spiritual meaning aspect was slightly different to that of the other aspects of the experience. While overall analysis of the rating of this aspect indicated a significant difference ($\chi^2 = 12.18$, $df = 4$, $p < 0.02$), there was no significant difference between the responses of the “none” group and the “1-2” group. There was also no significant difference in response between the “6-12” and “>12” groups while the “3-6” group response appeared to bridge the responses of the remaining clusters. Thus the main difference appeared to be between the negative to neutral response of the “none” and “1-2” groups and the slightly positive response of the “6-12” and “>12” groups.

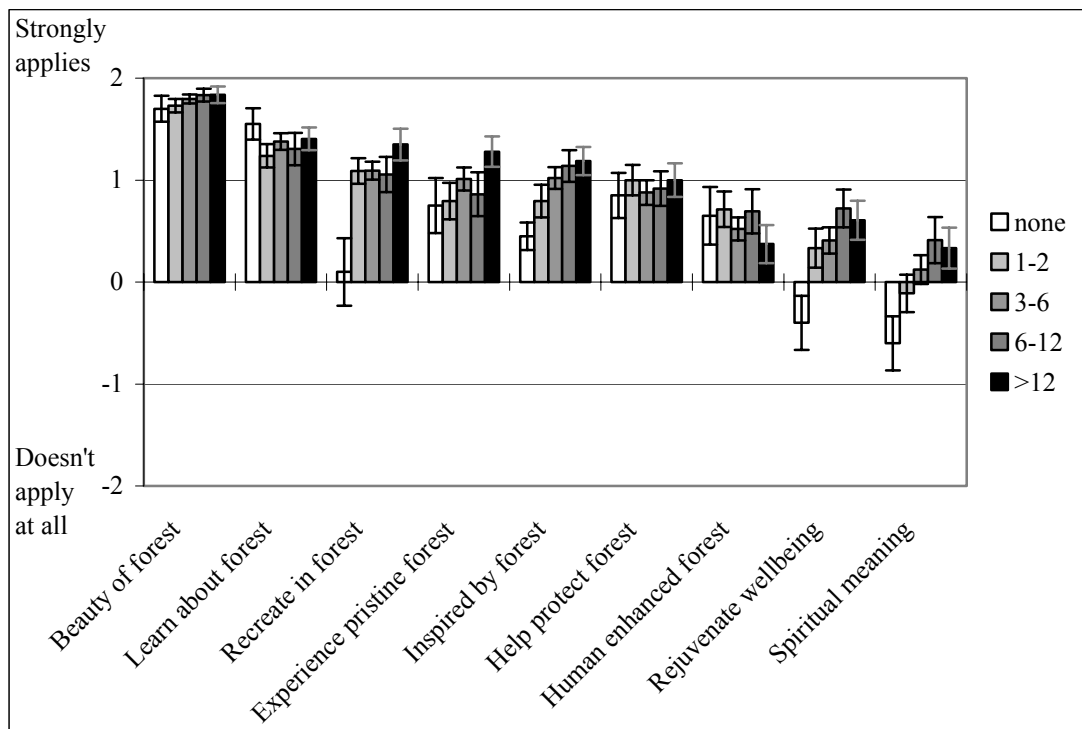


Figure 4.18: Mean attitude response to the TTW site before experiencing the site according to frequency of natural area visitation.

All groups indicated that the “beauty” and “learning” aspects were the important component of their experience. However, differences in rating of the remaining aspects highlighted above appear to conform to the expected influence of increasing accumulated experiences in natural areas. The low rating of the “recreation” aspect reflects the preferences for such activities in relation to the experience in natural areas.

Respondents who did not regularly visit natural areas presumably do not consider natural settings as primary destinations for recreation. Thus respondents in the “none” category rated this aspect neutrally while the remaining natural area visitation groups responded positively.

The significant link between the response to “spiritual meaning” and “rejuvenate well-being” and the frequency of natural area visitation suggested that responses were determined by the extent of accumulated experiences with natural areas. This relationship is supported by the notion that an accumulation of experience in natural areas results in the individual building a more complex relationship with such places (Maslow, 1968; Williams et al, 1992; Eisenhauer et al, 2000). The phenomenon whereby respondents who do not usually visit natural areas considered the spiritual and well-being aspects to be irrelevant suggested they perhaps had not developed the complexity of interaction with natural settings to the extent where a spiritual dimension was considered relevant. Another possibility might be that such respondents don’t see a connection between spirituality, well-being and experience of natural areas.

The attitude responses after the TTW site experience, as compared between natural area visitation groups, maintained essentially the same relative relationships as in the responses before the site experience. Significant differences were evident in response to the “recreation”, “well-being” and “spiritual aspects” of the site experience (Figure 4.19). The lack of alteration in the relative attitude responses of the various groups suggested past experiences in natural areas influenced the responses to the site experience to a greater extent than the site itself.

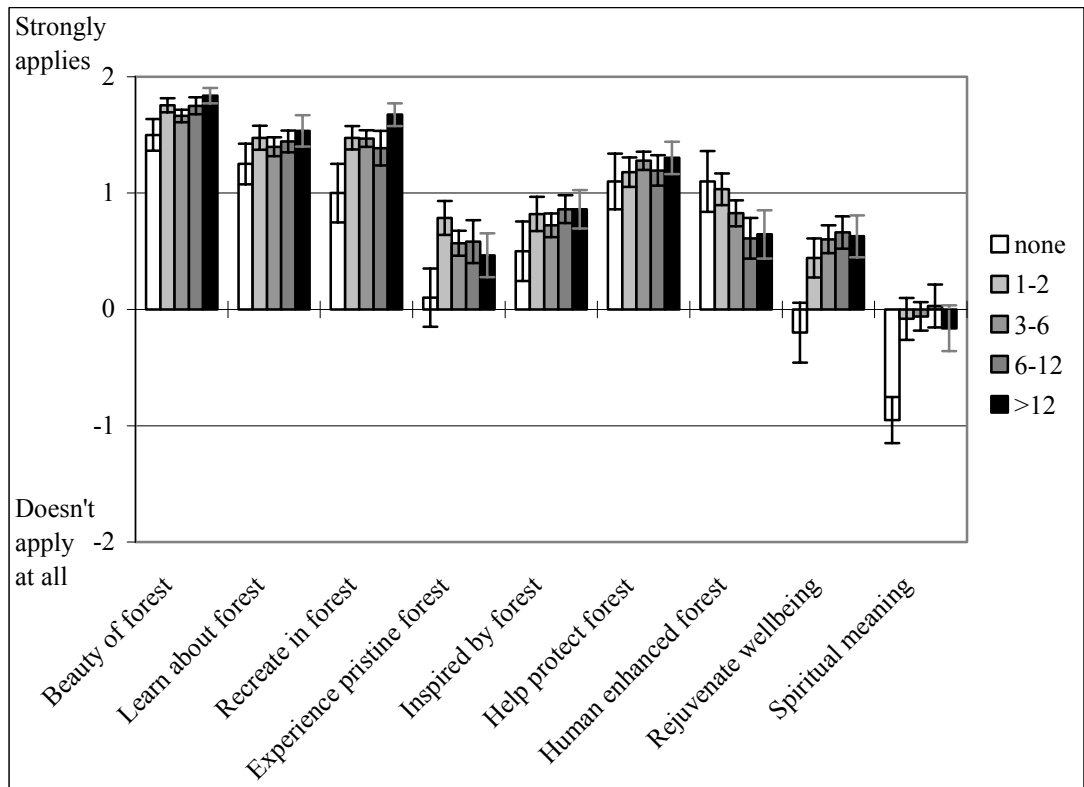


Figure 4.19: Attitude response to the TTW site after the experience according to frequency of natural area visitation.

The magnitude of change in response as compared between natural area visitation groups essentially followed the pattern of the respective before and after response data (Figure 4.20). The only significant difference in magnitude of change occurred in response to the “recreation in the forest” aspect. The “none” group demonstrated a significantly greater increase in rating of this aspect relative to the natural area visitation groups ($\chi^2 = 9.43$, $df = 4$, $p < 0.05$). This may be a function of the initial low rating of the recreation aspect given by the “none” group owing to natural areas being considered unlikely recreation destinations. There was no significant difference, between groups, in magnitude of change in response to the remaining aspects of the site experience.

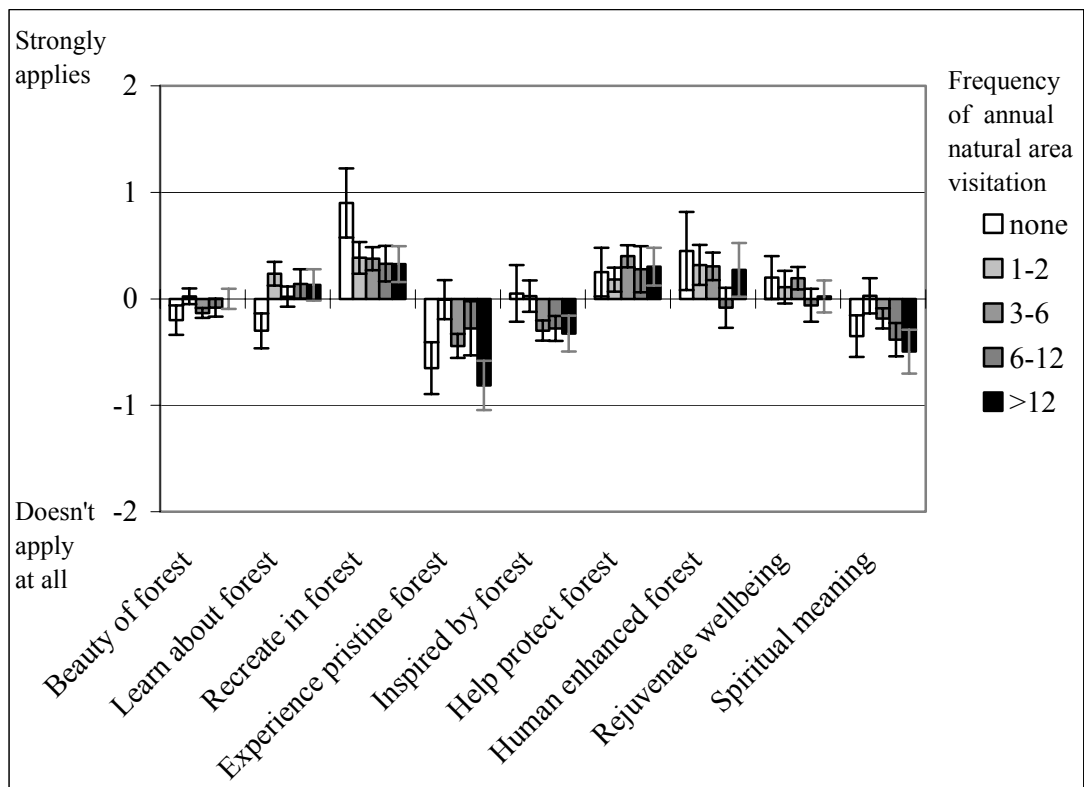


Figure 4.20: Change in attitude response to the TTW site according to frequency of natural area visitation.

It is interesting to note that the “none” group respondents increased their rating of the recreation aspect significantly from a neutral response to positive in the post experience survey. This indicated the site positively influenced attitudes toward the site as a recreational experience despite noncommittal ratings before the experience. Thus, the site may have positively influenced the non-natural area visitors in terms of affording a more positive attitude toward a recreational experience in a setting they otherwise would not consider to be able to offer such an aspect.

4.4 Use of Low intensity Media

On-site interpretation at the TTW was conducted primarily through two media types: text based, in the form of on-site signs, and the design of the site itself. On-site signs were comprised of directional signs indicating available facilities and informational signs relating to both the natural and built aspects of the site. The site was originally designed such that most signs were located centrally around the Tingle Shelter area.

The Tingle Shelter staff, while not professionally trained guides, may be counted as a third information source as they provided visitors with information on facilities and

activities available at the site; general information relating to the built aspects of the site (particularly the TTW) and basic information relating to the natural aspects of the site. However, the Tingle Shelter staff did not function as interpretive communicators but primarily act a sales staff for access tickets to the TTW as well as the souvenir shop. Discussion with site staff indicated most visitors interact through requests for directional and ticket information or to purchase goods from the shop.

4.4.1 Walk trail participation

The site offered two distinct walk trail experiences in the form of the TTW and the Ancient Empire ground level walk. The contrast in the design of the two walks provided for two different approaches to interpretation through site design. The TTW presented a confronting experience of the forest that challenges visitors by placing them outside their comfort zone. That is, a flexible, moving structure up to 40m above ground level with apparently very little infrastructure to prevent visitors plummeting to the ground. The AEW presented a passively reflective experience allowing visitors to take in the natural surroundings at their own pace at the more familiar ground level experience of the forest. Most respondents (98%) chose to experience the TTW as it forms the main focus of attraction at the site. Of those that experienced the TTW, a significant proportion also experienced the AEW (83%), leaving approximately 16% of respondents who experienced the TTW but not the AEW. A small group of respondents chose to experience the AEW but not the TTW, however, the minute size of this sample rendered it inappropriate for inclusion in analysis. This therefore created two activity participation groups within the sample population, those who experienced both the TTW and the AEW (TTW-AEW, n=210) versus those who only experienced the TTW (TTW only, n=43).

Knowledge and Walk Trail Participation

A significant difference between TTW only and the TTW-AEW respondents was found in the change in the correct knowledge score after the site experience ($z = -2.49$, $p < 0.02$). While analysis revealed there was no significant difference between the two groups mean knowledge scores before and after the experience, the significant difference in change suggested the AEW had an additional influence on knowledge acquisition (Figure 4.21).

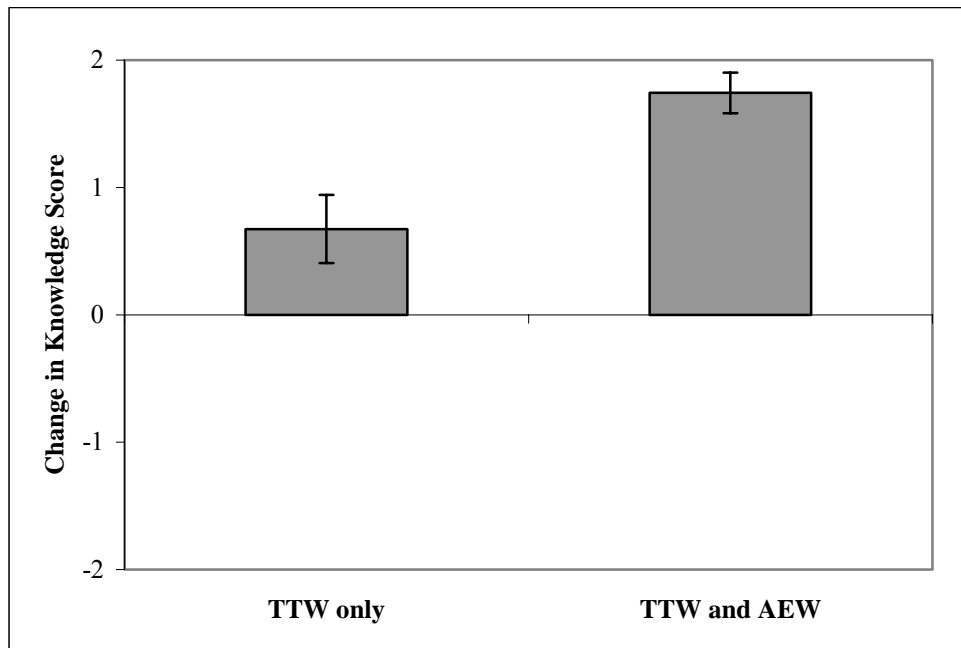


Figure 4.21: Mean change in correct knowledge responses according to walk trail participation at the TTW site.

As respondents choosing to experience both walks generally spent more time at the site than the TTW only group, it may be argued that the TTW-AEW respondents had more time to absorb knowledge. Thus, it may be possible that it is not the experience of the two walks combined that enhanced knowledge to a greater extent than the TTW alone, but rather the increased length of time spent at the site.

If there was a relationship between walk trail participation and knowledge gain, this may lie in the design of the respective walk trails. The AEW presents wider walk tracks with more alcoves for stopping to observe the forest in relation to the TTW with its restrictive space and narrow catwalks.. The restrictive space on the TTW and associated crowding may be a factor in the significant difference apparent in knowledge gain. Crowding is a negative perception by visitors who consider that their experience of a site has been obstructed or negatively influenced by overly large numbers of others (Shelby et al, 1988). Perceptions of crowding by the visitor are influenced by factors including the physical proximity of other visitors, freedom of movement and threats to autonomy (McManus, 1998). The threshold levels of these factors may vary according to the social and environmental context, such that visitors will tolerate a certain level of invasion of private space or restriction of movement according to their expectation of the site experience. That is, a wilderness hiker may consider the presence of another lone individual as crowding while a visitor to a national park will tolerate the presence

of perhaps several dozen other individuals or groups (Choi et al, 1976; Shelby et al, 1988; McManus, 1998). Negative attitudes to an experience reduce the receptivity of the individual to the site experience and its associated communicated messages (McManus, 1998).

The TTW effectively presents a narrow one-way channel along which visitors pass, confined by a series of narrow catwalks and small circular platforms. The visitors are physically contained within a narrow space where passing other individuals within close proximity was frequently necessary. This is reminiscent of McManus' (1998, p40) description of the Stonehenge access pathway in which visitors were subjected to "regimentation and crowding because of the limited ... breadth of the walk...". Similarly, TTW visitors who wish to stop while walking on the narrow canopy structure are effectively obstructing the main channel of flow as the confined space does not allow for rest points apart from the slightly wider viewing platforms. Thus, as with Stonehenge, this may either discourage visitors from stopping, creating perceived threats to autonomy or; visitors stopping along the walk inevitably come within close proximity of other passing visitors having their personal space invaded. Crowding on the TTW may frequently occur owing to the confined space, large numbers of other visitors and the strictly one-way nature of the trail. Thus, respondents who chose to experience the TTW trail alone may have experienced crowding and therefore, were likely to develop negative attitudes toward the site experience.

In contrast, the AEW is constructed of wider hardened pathways and board walks and forms a secondary experience at the site. The layout of the AEW includes a more convoluted trail, wider platform areas, seating and cul-de-sacs. The width of the trail allows visitors to walk side by side perhaps allowing or encouraging more discussion amongst members of particular groups visiting the site. The AEW design also allows visitors to easily pass without body contact while circular loops and dead ends enable visitors to access to areas with no "through traffic". While the AEW has some directional signs, unlike the TTW it is not a strictly one-way walk trail, providing greater freedom of movement.

The secondary nature of the experience reduced visitor numbers accessing the AEW. Casual observation of bus tour participants revealed a sole focus on the TTW owing to restricted time spent at the site. The nature of bus tour groups meant a large number of

people (occasionally more than 50) simultaneously accessed the TTW trail, intensifying crowding issues. Most respondents also tended to experience the TTW first then, if motivated, explored the AEW. Thus, the AEW is less susceptible to crowding than the TTW trail given the greater allowance for space, freedom of movement, 16% fewer participants and less obvious physical confinement. The AEW was less likely, than the TTW, to develop negative respondent attitudes and is hence more likely to encourage a positive learning environment.

While the TTW provided a simple one-way loop, the AEW presented a more convoluted trail conducive to exploration. Respondents who experienced the AEW were perhaps encouraged to explore their environment to a greater extent than while on the TTW structure, hence fostering more of a learning environment. Hart (1981) and Hungerford & Volk (1990) stated that problem solving and investigation are important components in encouraging involvement in environmental education and learning. Similarly, Ballantyne *et al* (1998) connected the concepts of exploration and learning in their study of visitors to Fraser Island. Fraser Island visitors seeking recreational fulfilment, through activities such as fishing, swimming and four wheel driving, were less receptive to learning than those interested in exploration of the island. This suggested visitors engaged in exploration were also more open to acquisition of knowledge relating to the given environment. Thus, the layout of the AEW may encourage learning through inducing exploration while the channel like experience of the TTW may not. This is supported by the data relating to rating of the site as a learning experience discussed in the proceeding section.

Attitude to Site Experience and Walk Trail Participation

A significant relationship was found between the walk trail participation at the site and rating of certain aspects of the site experience (Figure 4.22). Comparison of attitude responses to the TTW site before experiencing it revealed significant differences in rating of “pristine forest” and “rejuvenate well-being” between the TTW only and TTW-AEW groups. The TTW-AEW group rated the “pristine forest” component significantly higher than did the TTW only group before experiencing the site ($\chi^2 = 4.60$, $df = 1$, $p < 0.05$). While both groups rated this aspect positively, the TTW-AEW group demonstrated a more positive response than the TTW only group. Similarly, the TTW-AEW group rated the rejuvenate well-being component significantly more positively than did the TTW only group before the experience ($\chi^2 = 7.82$, $df = 1$,

$p < 0.01$). While the TTW only group responded neutrally to this concept, the TTW-AEW group responded somewhat positively.

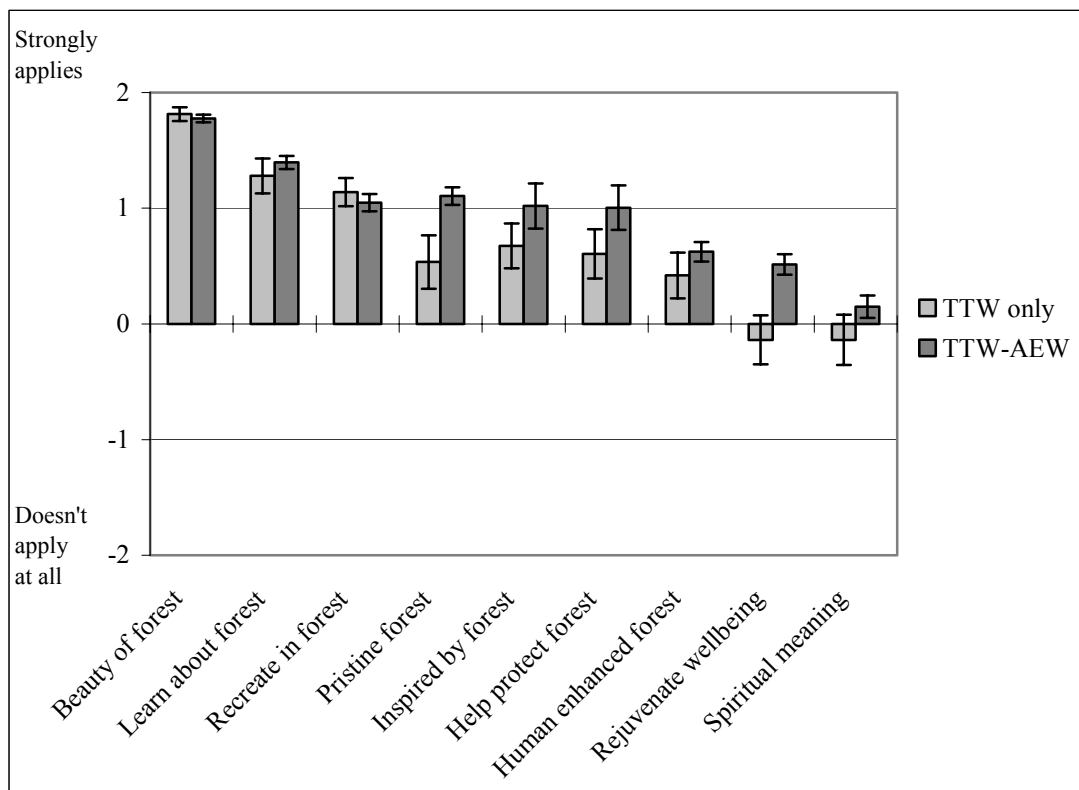


Figure 4.22: Mean attitude response to the TTW site before experiencing the site according to walk trail participation.

The difference in rating of the “pristine forest” and “rejuvenate well-being” aspects before actually experiencing the TTW site suggested that respondents who placed a higher emphasis on these aspects were more likely to choose to experience the AEW as well as the TTW. In contrast, those respondents who placed a lower priority on wellbeing and pristine forests focused mainly on the TTW experience. This may in turn relate back to the type of experience each trail offers. The TTW provided a restrictive but challenging experience while the AEW provided for a more exploratory, less directed experience.

Post visit responses of the two groups once again revealed a significant difference in the rating of the pristine and well-being aspects of the experience (Figure 4.23). The group who chose to experience both the TTW and AEW rated the “experienced pristine forest” aspect significantly more positively than the neutral response of the TTW only group ($z = -2.71, p < 0.01$). Similarly, the TTW-AEW group also rated the “rejuvenate

well-being” aspect significantly more positively than the neutral response of the TTW only group ($z = -2.97, p < 0.01$). The continuity in response to these aspects in the pre and post visit surveys suggested that appreciation of the pristine forest and rejuvenation of well-being were attitudes that respondents brought to the experience rather than the site influencing response to these aspects. In other words, respondents who tended to place a low priority on the experience of the pristine forest and rejuvenation of wellbeing tended not to use the AEW trail, preferring the singular experience of the TTW.

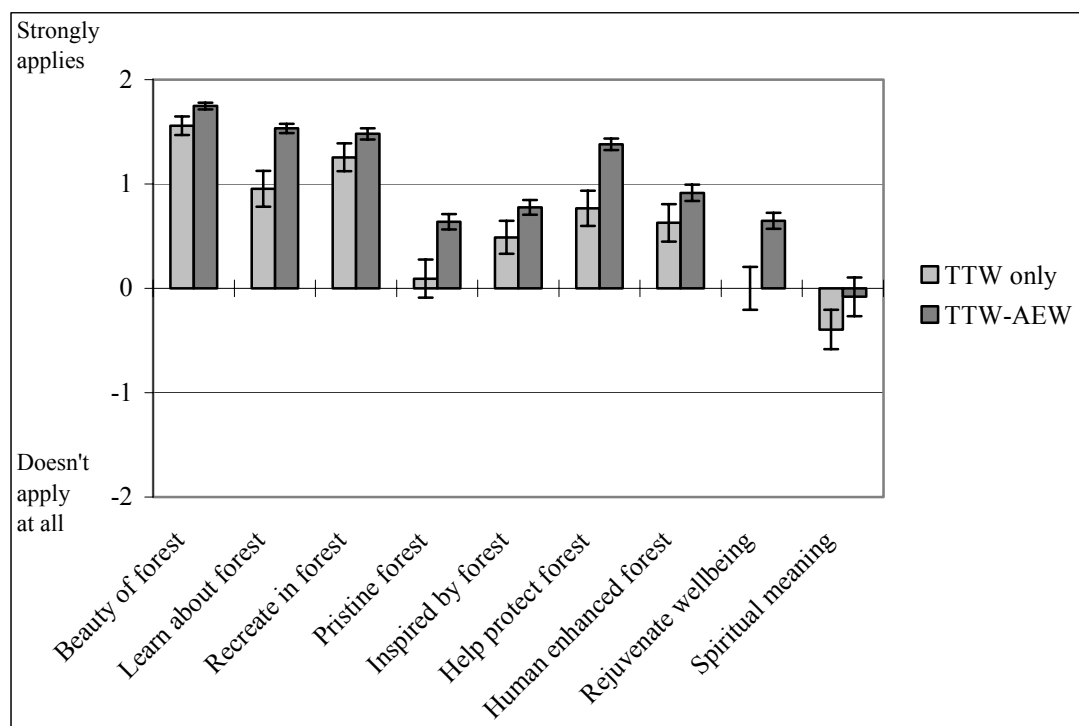


Figure 4.23: Mean attitude response to the TTW site after experiencing the site according to walk trail participation.

Examination of the magnitude of change in rating of the site experience statements revealed significant differences between the walk trail participation groups (Figure 4.24). The TTW only group demonstrated a significantly larger shift in rating of the “beauty of the forest” aspect of the experience as compared with the TTW-AEW group ($z = -2.47, p < 0.02$). The TTW only group demonstrated a slight negative shift in attitude response while the TTW-AEW group ratings showed no change. A similar result was evident in response to the “learn about the forest” aspect with the TTW only group demonstrating a negative shift while the TTW-AEW group demonstrated a lesser positive increase ($z = -3.08, p < 0.01$). In other words, respondents who only experienced the TTW tended to negatively alter their ratings of the learning and beauty aspects to a

greater extent than those experiencing both the AEW and TTW. This may be associated with the lack of signs along the TTW structure, restricting respondent access to learning about the site.

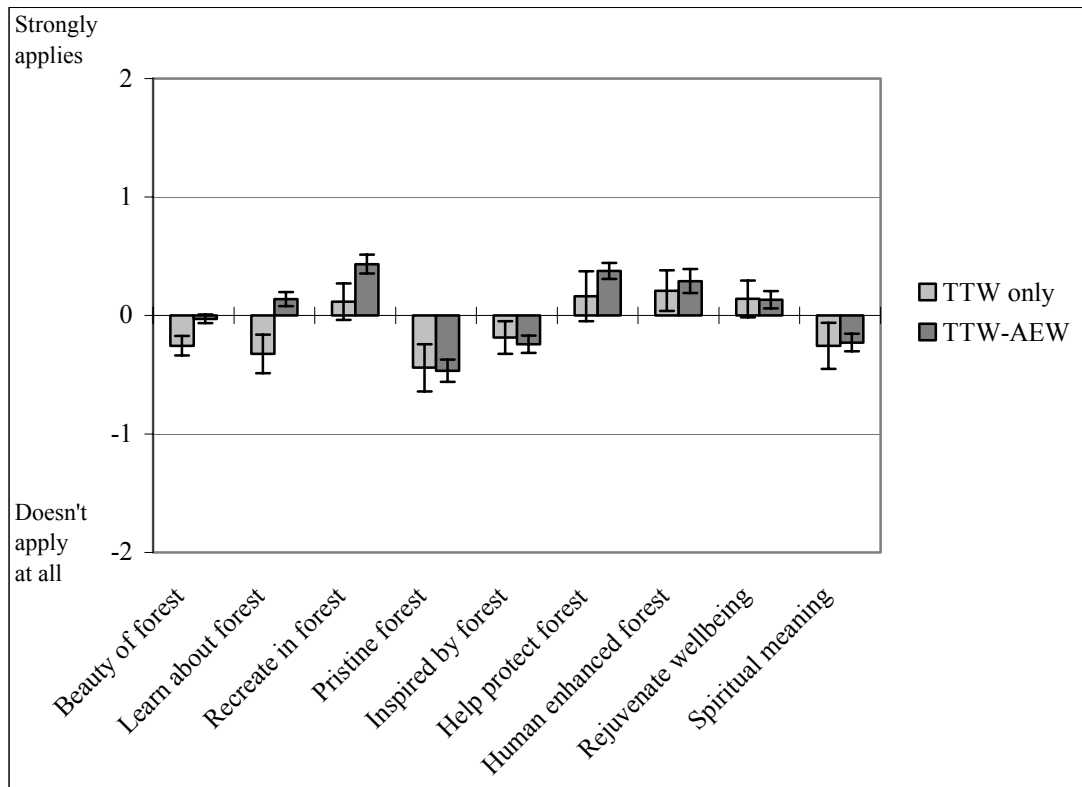


Figure 4.24: Change attitude response to the TTW site according to walk trail participation.

Differences between the TTW only group and TTW-AEW group apparent in the after the site experience but not before may suggest differing influences on attitudes according to the walk trail participation group. Of particular interest is the significantly lower rating of “learn about the forest” by the TTW only group when compared with the TTW-AEW group response ($z = -3.51, p < 0.01$). Both groups rated this aspect approximately equally in the pre-visit survey. The post visit response demonstrated that the TTW only group responded significantly less positively to the learning aspect than did the TTW-AEW group. While the TTW only group demonstrated a slight but insignificant decrease between the before and after paired response to this learning aspect, the TTW-AEW group had a significant positive increase in rating ($z = -2.37, p < 0.02$). If combined with the knowledge data discussed earlier, this suggested that the TTW-AEW experience is more likely to positively influence appreciation of the site as a learning experience than the TTW alone. As the AEW has some trail side signs while

the TTW had none, this may explain the lower rating of learning by respondents experiencing the TTW only.

4.4.2 Interpretation media and visitor influence

The types of interpretation media sources available at the TTW site were limited mainly to trail-side signs and information display boards near the Tingle Shelter. Some information was available through the information site staff though this related mainly to the structure of the TTW or merchandise sales related information. Given the low intensity of interpretive media available, comparisons were made between respondents who used the signs and displays and those who did not.

Analysis of data based on whether or not respondents used particular interpretive media indicated that there was no significant difference in knowledge. This in itself may be of interest as it suggests that information obtained through the site staff is unrelated to improving knowledge about the natural surroundings. This may be due to the predominantly sales oriented focus.

The lack of significant difference between respondents who did and did not use the trail-side signs may be a result of survey participants confusing these with the information displays. That is, respondents who indicated use of trail-side signs may have actually used the information displays rather than the signs along the actual trails. Thus, the information display use group and the trail-side sign use group were inter-mingled. Incorporating symbols or pictures into the survey form to graphically differentiate between each possible selection may have remedied this confusion. Combining the information display and trail side sign use groups to form a text based sign use group accounts for over 90% of the respondents. The discrepancy of group size between respondents using these sources and those who did not meant that comparative analysis was inappropriate.

4.4.3 Exploratory trail side interpretive sign trial

In response to the preliminary survey data indicating the primary suggestion for improvement to the TTW site to be trail-side signs, an experimental sign trail was conducted. This involved placing interpretive signs along the TTW structure, originally

designed and built without any trail-side signs. Installation of additional trail-side signs did not significantly impact on respondent knowledge or the rating of the TTW site as a learning experience. That is, more signs along the walk trail did not correlate with greater knowledge gain. This finding relates somewhat to a study of an environmental education program by Howell and Warmbrod (1974) examining the impact of providing a written manual in addition to regular teaching programs. This study found the presence or absence of written communication did not significantly impact on the overall outcome of the existing education program in terms of raising understanding and awareness of environmental issues. Cole et al (1997) also noted that while the presence of communicative media in natural areas impacts positively on respondent knowledge, there is a threshold at which the number of signs has no further impact on respondent knowledge.

Installation of additional signs was significantly related to the number of respondents suggesting that more signs be provided at the TTW site. Prior to the sign trial, respondents often expressed irritation at the lack of trail-side signs and indicated more should be installed. A similar trend was evident in the preliminary survey. This appeared to support the notion that respondents were increasingly expectant of the presence of interpretive and other interpretive media (Moscardo, 1998). Suggestions for more signs significantly decreased after trail-side interpretive signs were installed ($\chi^2 = 9.51$, $df = 3$, $p < 0.05$). The reduction in suggestions for more information provision using signs indicated respondents perceived the experimental trail-side signs to be adequate as an information source. Thus, although the installation of trail-side signs did not appear to influence knowledge, they provided an increased positive perception of information availability. This seems to have occurred through having interpretation 'on-tap' along the TTW trail rather than respondents having to recall information previously read at the Tingle Shelter.

Repeat Visitation and interpretive sign trial

Repeat visitors to the TTW were the only sub-group, within the data gathered, to demonstrate significant changes in knowledge after the installation of trail-side signs. Repeat visitors to the TTW site comprised 13% of the total sample population. All but two of the repeat visitors were Western Australian residents.

Installation of trail-side signs resulted in a significantly greater positive change in mean knowledge scores of repeat visitors in the sample group, after experiencing the site, compared with the change prior to installation of signs ($z = -2.47, p < 0.05$). The repeat visitor group mean change in knowledge score after signs were installed was also significantly greater than the first time visitor group ($z = -2.01, p < 0.05$). While first time visitors demonstrated a positive change in knowledge as a result of experiencing the site, the addition of trail-side signs did not significantly influence the magnitude of change. Prior to the sign trial there was no significant difference between repeat visitors and first time visitors in terms of pre or post visit mean knowledge scores or change in knowledge scores (Figure 4.25).

This change occurred in conjunction with a significant relationship between repeat visitation and reason given for visitation ($\chi^2 = 59.7, p < 0.01$). Of the repeat visitor group, 78% indicated their reason for visitation was to show the site to friends or relatives compared with 5% of first time visitors surveyed. The attraction of the TTW structure and trees figured significantly lower in the reasons for visitation provided by repeat visitors.

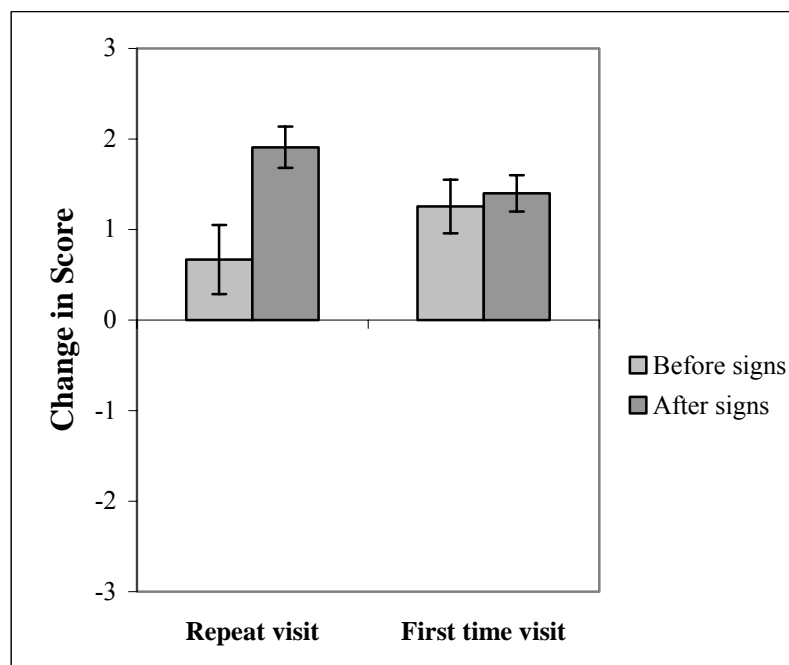


Figure 4.25: Mean change in knowledge scores before and after additional trail side signs installed at the TTW site.

First time visitors were mainly visiting to experience the TTW structure and the trees. This indicated that the unique design of the TTW site may effectively attract first time

visitors while the novelty has diminished in the perceptions of repeat visitors. The significance of this phenomenon may be that the repeat visitor group was seeking new or additional aspects of interest at the site, and hence, paid more attention to the new trail-side interpretive signs. Meanwhile, the first time visitor group was focussed mainly on the experience of the TTW structure and the surrounding forest and therefore did not absorb the trail-side sign information to the same degree as the repeat visitors.

Tourism attractions are generally defined by experiences that are outside the everyday routine of life (Pearce, 1991; Moscardo, 1992; Markwell & Weiler, 1998). While walking on flexible catwalks, through a forest, tens of metres above the ground serves as a unique attraction and attention grabbing focus for first time visitors, repeat visitors appear to be less influenced by the unique design of the site. Rather, respondents appeared to return to the site to allow friends and relatives to experience the thrill of the TTW structure and unique natural surroundings. Thus the relationship between increase of repeat visitors' knowledge and the installation of trail-side interpretive signs may be a result of these visitors seeking additional stimulation after the physical nuances of the site become familiar.

Significance of Additional Trail-side Signs.

The installation of trail-side signs at the TTW site appeared to perform two main functions. Firstly, it seemed to create the perception of a more favourable experience on the part of the visitor. The absence of trail-side signs, as part of a low intensity interpretation philosophy, to reduce distraction and visual pollution, resulted in negative feedback by respondents despite the presence of large informational sign displays located around the central Tingle Shelter area. The primary theme of the negative response was frustration at being unable to recall information provided at the head of the walk trail when attempting to identify subjects of interest during the experience. This may be related to the lengthy text included in the existing sign displays and the associated span of time required to fully read and absorb the information. Suggestions resulting from this frustration predominantly focussed on the provision of more trail-side signs.

However, it seems that while the trail-side interpretive signs may provide interpretation close at hand that momentarily satisfies the respondent need for knowledge, there is little or no additional impact on the ability to recall concepts or facts shortly afterwards.

Thus this finding appears to compromise between the concept of natural area visitors being leisure consumers largely uninterested in intellectualising their surroundings and visitors actively seeking educational experiences as part of nature-based tourism (McKercher, 1993; Moscardo, 1998; Sharpley, 2000). In other words, a low intensity of interpretation may negatively impact on the satisfaction of visitors regarding the educational aspect of the experience.

4.5 Conclusion

As a natural area site offering a low intensity level of interpretation, the TTW site appeared to influence respondents in a limited manner according to certain independent variables. Significant changes were measured in environmental attitude, knowledge and attitude toward the site experience. The respondent independent variables significantly related to attitude and knowledge responses were: gender; frequency of natural area visitation and walk trail participation. Gender and past experience in natural areas affected environmental attitudes and attitudes toward the site experience while walk trail participation was related more to the knowledge acquisition and attitudes to the site experience.

The TTW structure itself functioned as an effective draw card to the site, providing an exciting experience of the forest. It appeared that while being an effective marketing tool, the TTW structure did not influence respondents' attitudes toward the forest in terms of aesthetic beauty or learning. These aspects were fostered by the supplementary (or complementary) experience of the AEW. The inclusion of the AEW and TTW in the site design provided an interesting juxtaposition of the forest experience with the AEW being the more reflective and low key (i.e. low intensity experience) of the two. This seemed to cater for respondents who were seeking to fulfil emotion aspects of their interaction with the forest, such as rejuvenation of wellbeing. In this sense, it appears that the lower intensity experience of the AEW allows the forest to "speak for itself". In contrast, the TTW structure adds a human made experiential thrill while providing a unique perspective of the forest though the lack of trail-side interpretation appeared to present a negative aspect on the part of the respondents.