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ORIGINAL ARTICLE

The anxiety of Taiwanese women with or without continuity treatment after previous *in vitro* fertilisation failure

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Aims and objectives. To compare the anxiety levels of Taiwanese women who continued with *in vitro* fertilisation treatment and those who discontinued treatment post-*in vitro* fertilisation (IVF) failure.

Background. IVF is perceived as the last resort of infertility treatment. The impact of unsuccessful IVF treatment on psychological function has been documented; however, research comparing the levels of anxiety of women who cease and those who continue *in vitro* fertilisation post-failure is scant.

Design. A cross-sectional comparative study design was used.

Method. Fifty-eight women in whom *in vitro* fertilisation had failed within the previous year were recruited to this study from a medical centre in northern Taiwan; 34 women continued treatment and 24 discontinued treatment. The State-Trait Anxiety Inventory was used to assess their levels of anxiety.

Results. Women in the group who continued treatment exhibited higher state and trait anxiety (TA) than women in the group who discontinued treatment ($p < 0{\cdot}005$). The number and frequency of *in vitro* fertilisation cycles were significantly higher in the group who continued treatment than in those who did not. A strong positive correlation between state and TA ($r = 0{\cdot}8$, $p < 0{\cdot}01$) existed in both groups.

Conclusions. Both groups exhibited considerable levels of anxiety; however, the women who continued *in vitro* fertilisation treatment had higher levels of anxiety than those who discontinued treatment.

Relevance to clinical practice. The level of anxiety of women who decide to continue *in vitro* fertilisation treatment should be assessed as early as possible and counselling services provided to women who experience *in vitro* fertilisation failure should concentrate more on relieving psychological distress. One year after discontinuing treatment, some women still experience considerable anxiety; therefore, the care and assistance provided to these women need to be continually evaluated.

Key words: *in vitro* fertilisation, reproductive health, state anxiety, Taiwan, trait anxiety

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Introduction

Anxiety is a common experience for women who undergo *in vitro* fertilisation (IVF) treatment and could be an important factor related to poor treatment outcome (Smeenk *et al.* 2001, Sohrabvand *et al.* 2008). Successful pregnancy is the ultimate goal for women receiving IVF treatment and it is important to understand the factors affecting the treatment outcome, because this may enable effective prevention strategies to be developed to increase the treatment success rate.

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Taken together, the factors that affect the treatment result can be categorised as biomedical or psychological (Templeton *et al.* 1996, Csemiczky *et al.* 2000). Previous studies have shown the biomedical factors to include age, preceding gestation, duration of infertility, number of previous unsuccessful IVF attempts, tubal indication for fertility treatment and number of previous pregnancies (Stolwijk *et al.* 1996, Templeton *et al.* 1996). As biomedical factors tend to be stable and difficult to change, recent studies have focused more on psychological factors, which are relatively easier to change and easier to address clinically (Domar 2004, Cousineau & Domar 2007). Among the psychological factors affecting the result of treatment, anxiety is one of the most important and has been the subject of a considerable amount of research (Smeenk *et al.* 2001, Domar 2004, Sohrabvand *et al.* 2008).

IVF is often perceived as the last resort of infertility treatment. Women undergoing IVF usually suffer from high anxiety levels owing to their infertility and the arduous treatment procedure they have to go through (Smeenk *et al.* 2001). The pregnancy rate following IVF is around 35% (Centers for Disease Control and Prevention [CDC], 2008); therefore, approximately two-thirds of infertile couples will need to make the choice as to whether to continue or stop the treatment after an unsuccessful attempt. A study in the USA showed that anxiety is a significant factor influencing a woman's decision to continue or cease IVF treatment; it also contributes to an adverse treatment outcome (Domar *et al.* 2009). Other studies have also shown that psychological factors including anxiety may affect the outcome of IVF treatment (Csemiczky *et al.* 2000, Smeenk *et al.* 2001). However, most of these studies were carried out in Western countries and the effect of anxiety on IVF outcome has not yet been investigated in Eastern women. It is well-known that culture may influence the beliefs and values surrounding pregnancy and diversification of the study population could provide insight into the relationship between anxiety and IVF treatment. Therefore, this study aimed to examine the difference in the level of anxiety between women who continued IVF treatment and those who discontinued IVF treatment post-IVF failure in Taiwan. The factors associated with different anxiety levels and the relationship between state anxiety (SA) and trait anxiety (TA) were also examined.

Methods

Participants

Women who had experienced failure of IVF within the previous year were recruited from a medical center in northern Taiwan, where 300 cycles of IVF are performed annually. The study was approved by the University Review Board for research involving human subjects. A total of 80 women were contacted by telephone and all agreed to participate. Written informed consent was obtained prior to data collection.

A set of questionnaires including a demographic data form and the State-Trait Anxiety Inventory (STAI), along with instructions, was sent to each participant and participants were asked to return the completed questionnaires within one month. Questionnaires were re-sent to those who did not return them within a month, followed-up by a telephone call. Fifty-eight of the 80 participants completed and returned the questionnaires (response rate, 73% [58/80]). The most common reason for not responding were 'being too busy' and 'not wanting to be reminded of the experience'. The women were divided into the following two groups: the continued treatment group (n = 34) and the discontinued treatment group (n = 24).

Measures

The first section of the questionnaire collected personal information, including age, marital status, education, occupation, religion, aetiology of infertility and a detailed history of IVF treatment. In addition, the STAI (Spielberger *et al.* 1983) was used to measure anxiety level. This inventory is comprised of two independent self-reported scales measuring two distinct anxiety concepts, SA and TA. The SA scale consists of 20 items and is conceptualised as a transitory emotional state or the condition of the individual characterised by subjective feelings. Assuming that anxiety associated with IVF treatment stems from a specific situation, the SA scale was used to examine the difference between women who continued and those who discontinued IVF treatment post-treatment failure.

The TA scale refers to relatively stable individual differences in predilection for anxiety, i.e. the differences between people with a tendency to respond to situations perceived as threatening with elevations in SA intensity. In this study, the TA sub-scale measured the participant's general propensity for anxiety. The TA sub-scale also consists of 20 items and subjects indicated how they feel in general (Spielberger *et al.* 1983). All items on the STAI were scored on a scale of 1–4, with 1 representing the least and 4 representing the greatest anxiety. The scores for all items were then summed to give an overall score ranging from 20 (least anxiety)–80 (greatest anxiety) for each sub-scale.

The STAI has been widely used in various studies and has been shown to be of high reliability and validity (Spielberger *et al.* 1983, Csemiczky *et al.* 2000, Hjelmstedt *et al.* 2003,

Boscaglia *et al.* 2005, Li & Lopez 2005). In this study, the test–retest stability coefficient was 0·95 for the TA sub-scale and 0·65 for the SA sub-scale. Cronbach's α in this study was 0·90 for the TA sub-scale and 0·94 for the SA sub-scale. The construct validity was examined by factor analysis and two factors from the SA and TA sub-scales were extracted, which together accounted for 52 and 56% of the variance, respectively. These findings revealed that the STAI used in our study exhibited a high level of reliability and validity.

Data analysis

SPSS (version 17·0; SPSS Inc., Chicago, IL, USA) was used for statistical analysis. To examine between-group differences, the demographic data were analysed using the *t*-test, analysis of variance, the chi-square test and Fisher's exact test where appropriate. The *t*-test was also used to examine the difference in anxiety level between the continued and discontinued treatment groups. The Pearson correlation was used to analyse the relationship between SA and TA.

Results

Participant characteristics

Fifty-eight women were included in this study. No difference in age was observed between the group who continued IVF treatment ($n = 34$) and the group who discontinued IVF treatment ($n = 24$) (Table 1). There was no statistical difference in the mean age of the two groups ($p = 0{\cdot}146$), which was 38 (SD 5·0) and 40 years (SD 4·0) for the continued treatment and discontinued treatment groups, respectively. The primary infertility factor was a female factor in both groups (accounting for 50%). There was a significant difference ($p < 0{\cdot}05$) in the number of IVF treatment cycles between the two groups: 50% of the discontinued treatment group had received only 1 cycle of IVF, whereas > 50% of the continued treatment group had received > two cycles of IVF. The frequency of IVF also differed significantly between groups ($p < 0{\cdot}01$): approximately 97% of the participants in the continued treatment group had received IVF with breaks of < 12 months, while 37·5% of the participants in the discontinued treatment group received IVF with breaks of > 12 months. Most of the women had undergone IVF treatment for 'over two years' (continued group, 55·9%; discontinued group, 41·7%).

Table 1 Demographic characteristics of the study groups

Variable	Continued ($n = 34$)	Discontinued ($n = 24$)	p
Age (years)			
Mean ± SD	38 ± 5	40 ± 4	0·146
Infertility factor (%)			
Female	17 (50·0)	12 (50·0)	0·527
Male	8 (23·5)	4 (16·7)	
Both	5 (14·7)	2 (8·3)	
Unexplained	4 (11·8)	6 (25·0)	
Number of IVF cycles (%)			
1	5 (14·7)	12 (50·0)	0·027
2	11 (32·4)	4 (16·7)	
3	10 (29·4)	3 (12·5)	
≥ 4	8 (23·5)	5 (20·8)	
Frequency of IVF (%)			
Break ≤ 3 months	8 (23·5)	6 (25·0)	0·005
Break 3–6 months	9 (26·5)	4 (16·7)	
Break 6–12 months	16 (47·1)	5 (20·8)	
Break > 12 months	1 (2·9)	9 (37·5)	
Duration of receiving IVF (%)			
≤ 6 months	4 (12·1)	2 (8·7)	0·276
6–12 months	1 (3·0)	4 (17·4)	
1–2 years	10 (30·3)	8 (34·8)	
> 2 years	19 (55·9)	10 (41·7)	

Comparison of SA

Table 2 presents the mean SA scores of the two groups. The overall mean score of the SA in the continued and discontinued treatment groups was 47·2 (SD 8·3) and 39·0 (SD 9·0), respectively. The women who continued undergoing IVF treatment exhibited a significantly higher level ($p = 0{\cdot}001$) of SA than those who discontinued treatment and the scores of 13 of the 20 items of the SA subscale were significantly higher in the continued treatment group ($p < 0{\cdot}05$).

Comparison of TA

A comparison of TA between the continued and discontinued treatment groups is presented in Table 3. The overall mean TA score for the continued treatment group and the discontinued treatment group was 45·3 (SD 8·3) and 39·3 (SD 8·0), respectively. Generally, the women in the continued treatment group had a higher level of TA than the women in the discontinued treatment group ($p = 0{\cdot}007$).

Factors related to anxiety

No significant differences in SA or TA existed between women with different demographic characteristics, including age, marital status, education, occupation and religion. Thus, the two types of anxiety were not significantly associated with any demographic factors. On the other hand, SA and TA were strongly correlated ($r = 0{\cdot}8$, $p < 0{\cdot}001$), indicating that women with higher TA scores also had higher SA scores.

Table 2 Comparison of SA between the two groups

Group	I Continued	II Discontinued	Difference		
Item	Mean ± sd	Mean ± SD	*p*	Mean	95% CI
Total	47·2 ± 8·3	39·0 ± 9·0	0·001	8·2	0·22–0·92
1 I feel calm	2·7 ± 0·6	2·2 ± 0·7	0·002	0·5	0·05–0·80
2 I feel secure	2·7 ± 0·6	2·3 ± 0·8	0·027	0·4	−0·19–0·64
3 I am tense	2·3 ± 0·8	2·0 ± 0·8	0·285	0·3	−0·32–0·40
4 I am regretful	1·8 ± 0·6	1·8 ± 0·7	0·822	0	−0·13–0·57
5 I feel at ease	2·8 ± 0·6	2·5 ± 0·8	0·207	0·3	−0·04–0·62
6 I feel upset	2·2 ± 0·7	1·9 ± 0·5	0·085	0·3	0·02–0·76
7 I am presently worrying over possible misfortunes	2·0 ± 0·8	1·6 ± 0·5	0·040	0·4	0·02–0·81
8 I feel rested	2·7 ± 0·7	2·3 ± 0·8	0·038	0·4	−0·15–0·57
9 I feel anxious	1·8 ± 0·7	1·6 ± 0·7	0·245	0·2	0·17–0·80
10 I feel comfortable	2·7 ± 0·5	2·3 ± 0·7	0·003	0·4	0·35–1·04
11 I feel self-confident	2·7 ± 0·6	2·0 ± 0·7	0·000	0·7	−0·12–0·58
12 I feel nervous	2·1 ± 0·7	1·9 ± 0·6	0·193	0·2	−0·09–0·65
13 I am jittery	1·8 ± 0·8	1·5 ± 0·6	0·133	0·3	0·03–0·65
14 I feel 'highly-strung'	2·1 ± 0·6	1·8 ± 0·6	0·035	0·3	0·18–0·98
15 I am relaxed	2·7 ± 0·7	2·1 ± 0·9	0·005	0·6	0·11–0·84
16 I feel content	2·6 ± 0·6	2·1 ± 0·8	0·012	0·5	0·17–0·91
17 I am worried	2·2 ± 0·7	1·7 ± 0·6	0·005	0·5	0·08–0·92
18 I feel over-excited and 'rattled'	2·0 ± 0·9	1·5 ± 0·7	0·019	0·5	0·32–1·00
19 I feel joyful	2·6 ± 0·7	2·0 ± 0·6	0·000	0·6	0·28–0·93
20 I feel pleasant	2·6 ± 0·6	2·0 ± 0·6	0·000	0·6	3·63–12·86

Discussion

Previous studies have indicated that biomedical and psychological factors both affect the outcome of IVF treatment. In terms of psychological factors, psychological burden is the main reason for discontinuation of IVF treatment (Olivius *et al.* 2004). It has been reported that anxiety may affect the outcome of IVF treatment. Women with greater levels of anxiety are more inclined to cease treatment (Smeenk *et al.* 2004) and higher SA levels are normally seen in women in whom IVF has failed (Csemiczky *et al.* 2000). However, our results showed that the Taiwanese women in this study who continued undergoing IVF treatment had higher SA and TA scores than those who discontinued treatment. Our results are not in agreement with those of most previous studies involving Western participants and cultural differences may be the cause of the contrasting results. In Chinese society, child-bearing is a very important aspect of life for most women and having no offspring is a violation of the beliefs of traditional Chinese society; in other words, for the Chinese, marriage means continuing the family blood line by producing heirs and if heirs are not produced, one is accused of lacking filial piety. Previous research involving Taiwanese women has shown that traditional Chinese childbearing beliefs cause pressure for infertile women and the more affected they are by the beliefs, the greater the psychosocial burden suffered (Kuo *et al.* 1998). Therefore, women in the group who continued to receive treatment may experience greater pressure to achieve pregnancy (e.g. for a woman whose spouse is the only son in his family, the family blood line would end if the woman cannot bear a child). As a result, such women may experience greater pressure than the group that discontinued treatment. This inference matches our findings of the numbers of and interval between treatment cycles (*vide supra*). In line with this hypothesis, the women in our study who continued treatment also had higher levels of TA; this result implied that the anxious-inclined group appeared to be more easily influenced by cultural pressure. Hence, cultural influence should be considered when assessing the anxiety level of women undergoing IVF treatment.

Besides, it is reasonable to speculate that the result could be attributed to the fact that the group who continued treatment not only suffered from disappointment associated with treatment failure, but also faced uncertainty surrounding future treatment, which is likely to cause a higher level of anxiety. In addition to lowering the pressure associated with treatment, another possible reason for the lower anxiety level in the discontinued treatment group may be their acceptance of the reality of infertility. A study by Su and Chen (2006) showed that Taiwanese women who chose to cease treatment

Table 3 Comparison of TA between the two groups

Group	I Continued	II Discontinued	Difference		
Item	Mean ± sd	Mean ± SD	*p*	Mean	95% CI
Total	45·3 ± 8·3	39·3 ± 8·0	0·007	6·0	1·72–10·42
1 I feel pleasant	2·6 ± 0·6	2·3 ± 0·7	0·089	0·3	−0·05–0·64
2 I tire quickly	2·1 ± 0·6	1·9 ± 0·5	0·347	0·2	−0·16–0·44
3 I feel like crying	2·6 ± 0·7	2·3 ± 0·6	0·096	0·3	−0·06–0·69
4 I wish I could be as happy as others seem to be	2·6 ± 0·9	2·3 ± 1·0	0·353	0·3	−0·26–0·71
5 I am losing out on things because I cannot make up my mind soon enough	2·0 ± 0·8	1·4 ± 0·5	0·003	0·6	0·21–0·96
6 I feel rested	2·7 ± 0·6	2·3 ± 0·7	0·018	0·4	0·08–0·78
7 I am 'calm, cool and collected'	2·7 ± 0·8	2·1 ± 0·7	0·005	0·6	0·17–0·93
8 I feel that difficulties are piling up so that I cannot overcome them	2·1 ± 0·6	1·8 ± 0·6	0·060	0·3	−0·01–0·63
9 I worry too much over something that really doesn't matter	2·0 ± 0·6	1·8 ± 0·7	0·299	0·2	−0·16–0·52
10 I am happy	2·6 ± 0·7	2·0 ± 0·6	0·001	0·6	0·26–0·95
11 I am inclined to take things hard	2·0 ± 0·6	2·0 ± 0·7	0·808	0	−0·30–0·38
12 I lack self-confidence	1·9 ± 0·6	1·6 ± 0·7	0·155	0·3	−0·10–0·62
13 I feel secure	2·4 ± 0·7	2·0 ± 0·7	0·109	0·4	−0·07–0·69
14 I try to avoid facing a crisis or difficulty	2·6 ± 0·7	2·3 ± 0·8	0·084	0·3	−0·04–0·70
15 I feel blue	1·9 ± 0·6	1·8 ± 0·7	0·621	0·1	−0·26–0·44
16 I am content	2·7 ± 0·6	2·3 ± 0·7	0·022	0·4	0·06–0·79
17 Some unimportant thought runs through my mind and bothers me	1·9 ± 0·6	1·8 ± 0·6	0·305	0·1	−0·15–0·47
18 I take disappointments so keenly that I can not put them out of my mind	1·7 ± 0·7	1·3 ± 0·6	0·021	0·4	0·06–0·76
19 I am a steady person	2·4 ± 0·7	2·3 ± 0·7	0·401	0·1	−0·22–0·54
20 I get in a state of tension or turmoil as I think over my recent concerns and interests	2·1 ± 0·8	1·8 ± 0·8	0·146	0·3	−0·11–0·74

appeared to be much more accepting of the reality of infertility, perceiving the limitations of infertility treatment and re-planning their life without children.

It is noteworthy that despite the level of anxiety in the discontinued treatment group being significantly lower than in the continued treatment group, it was still higher than the average anxiety level. On the STAI, a score ≥ 40 indicates probable clinical anxiety and a cut-off score of 50 is considered to indicate high anxiety (Chahal *et al.* 2009, Pedersen *et al.* 2009), In the current study, the mean STAI score in the continued and discontinued treatment groups was nearly 50 and 40, respectively, revealing that both groups had a considerable level of anxiety. The women maintained a considerable level of anxiety one year after the termination of treatment and we therefore suggest that the long-term psychological impact on women experiencing IVF failure but choosing not to continue treatment should be further explored in future studies.

Our research has also shown that SA is positively interrelated with TA. Participants with high TA tended to be more state-anxious, which is consistent with previous research (Chahal *et al.* 2009). Health care providers should pay more attention to high trait-anxious individuals, especially those who have experienced IVF failure. In the clinical setting, consultations and care are often provided to women who are undergoing initial treatment, while women undergoing repeat treatment appear to be ignored, simply because they have already experienced treatment. However, our results showed that the group who continued treatment may suffer greater anxiety. Many researchers have emphasised that anxiety increases when the duration of treatment is prolonged and the increase in anxiety may also affect the outcome of IVF treatment (Csemiczky *et al.* 2000, Anderheim *et al.* 2005, Ellison *et al.* 2007). The findings of this study provide health care professionals with evidence that the psychological reaction of women undergoing continued IVF treatment after a previous failure is an issue that needs to be attended to, because they may require the same level of care as women undergoing their first treatment, if not more care.

The major limitation of this study was its cross-sectional design; in addition, the power of this study may have been limited due to the small sample size. Whether or not and how

the level of anxiety of both groups changes over time can only be examined via a longitudinal design with a larger sample. In addition, the tool used in this study, a self-reported scale used by many researchers, is considered efficient and easy to administer, but possibly underestimates the woman's level of anxiety, because women might disguise their real psychological reaction and pretend to be of appropriate mental status (Domar *et al.* 2009). Therefore, participants' actual levels of anxiety could potentially be much greater than those derived from the scores of the self-reported scale. Researchers need to heed the limitations of self-administered questionnaires and the use of multiple measurement instruments is suggested in the future, for example, adopting a self-reported scale supplemented with physiological measurements.

Conclusion

Women who experienced IVF treatment failure but decided to continue treatment exhibited greater levels of anxiety than women who discontinued treatment. The treatment frequency was higher and the interval between cycles was shorter in the women who continued treatment. However, one year after the discontinuation of IVF treatment, some women still suffered from considerable anxiety; therefore, both groups of women require additional psychological support.

Relevance to clinical practice

The level of anxiety of women who decide to continue IVF treatment should be assessed as early as possible and prevention of high levels of anxiety in these women is required. After treatment failure, health care providers should offer psychological intervention to meet the needs of these women, with continuous monitoring of the woman's level of anxiety when the duration of treatment is prolonged. Counselling should be given and an assessment of the psychological impact after experiencing IVF treatment failure needs to be made. By assisting these women to practice relaxation techniques and stress-reducing strategies and teaching them coping skills, health care providers can help them to reduce their levels of anxiety. Health care providers should be more aware of the psychological changes in women who have experienced multiple IVF failures who decide to undergo another treatment cycle within a short time and should provide more support throughout the course of treatment. Furthermore, care and assistance need to be provided for women who discontinue treatment but who are experiencing ongoing psychological stress.

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Contributions

Study design: TJS, PCK; data collection: TJS, PCK; analysis: TJS, SKL YLT and manuscript preparation: TJS, YLT, PCK.

Conflict of interest

All authors declare no conflict of interest.

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During the copy-editing of your paper, the following queries arose. Please respond to these by marking up your proofs with the necessary changes/additions. Please write your answers on the query sheet if there is insufficient space on the page proofs. Please write clearly and follow the conventions shown on the attached corrections sheet. If returning the proof by fax do not write too close to the paper's edge. Please remember that illegible mark-ups may delay publication.

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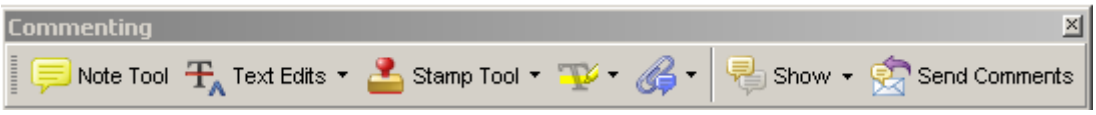
2	**AUTHOR: Please update the publication details for the reference Pedersen *et al.* (2009).**	

USING E-ANNOTATION TOOLS FOR ELECTRONIC PROOF CORRECTION

Required Software

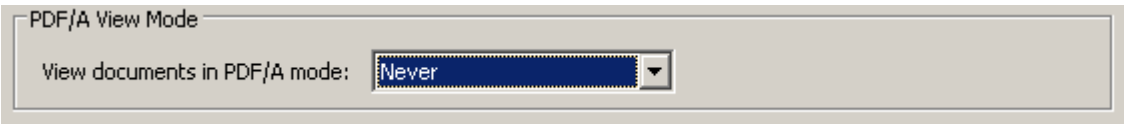
Adobe Acrobat Professional or Acrobat Reader (version 7.0 or above) is required to e-annotate PDFs. Acrobat 8 Reader is a free download: http://www.adobe.com/products/acrobat/readstep2.html

Once you have Acrobat Reader 8 on your PC and open the proof, you will see the Commenting Toolbar (if it does not appear automatically go to Tools>Commenting>Commenting Toolbar). The Commenting Toolbar looks like this:



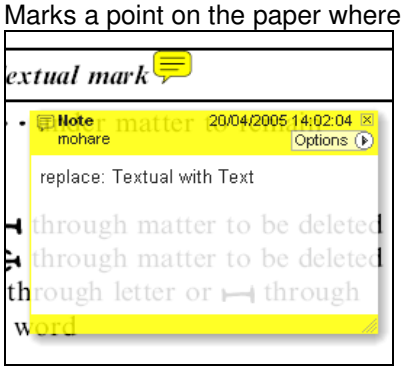
If you experience problems annotating files in Adobe Acrobat Reader 9 then you may need to change a preference setting in order to edit.

In the "Documents" category under "Edit – Preferences", please select the category 'Documents' and change the setting "PDF/A mode:" to "Never".



Note Tool — For making notes at specific points in the text

Marks a point on the paper where a note or question needs to be addressed.

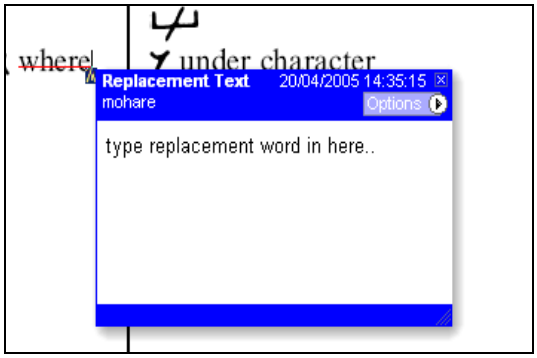


How to use it:

1. Right click into area of either inserted text or relevance to note
2. Select Add Note and a yellow speech bubble symbol and text box will appear
3. Type comment into the text box
4. Click the X in the top right hand corner of the note box to close.

Replacement text tool — For deleting one word/section of text and replacing it

Strikes red line through text and opens up a replacement text box.

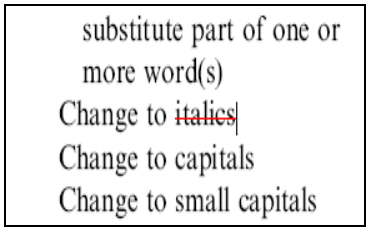


How to use it:

1. Select cursor from toolbar
2. Highlight word or sentence
3. Right click
4. Select Replace Text (Comment) option
5. Type replacement text in blue box
6. Click outside of the blue box to close

Cross out text tool — For deleting text when there is nothing to replace selection

Strikes through text in a red line.



How to use it:

1. Select cursor from toolbar
2. Highlight word or sentence
3. Right click
4. Select Cross Out Text

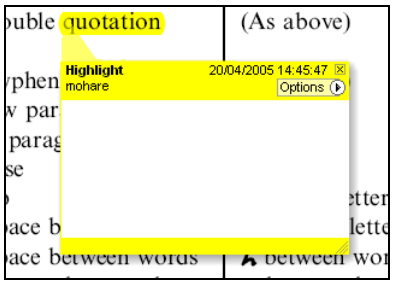
Approved tool — For approving a proof and that no corrections at all are required.

How to use it:

1. Click on the Stamp Tool in the toolbar
2. Select the Approved rubber stamp from the 'standard business' selection
3. Click on the text where you want to rubber stamp to appear (usually first page)

Highlight tool — For highlighting selection that should be changed to bold or italic.

Highlights text in yellow and opens up a text box.

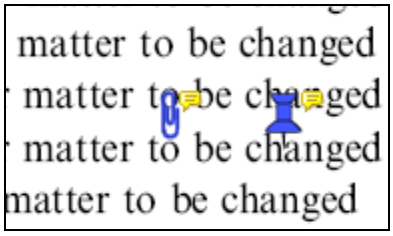


How to use it:

1. Select Highlighter Tool from the commenting toolbar
2. Highlight the desired text
3. Add a note detailing the required change

Attach File Tool — For inserting large amounts of text or replacement figures as a files.

Inserts symbol and speech bubble where a file has been inserted.

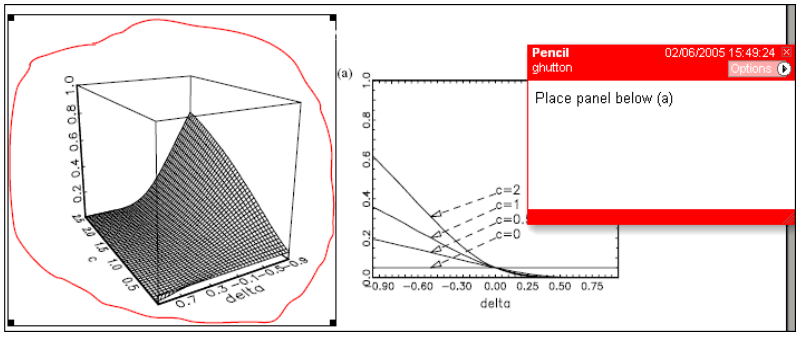


How to use it:

1. Click on paperclip icon in the commenting toolbar
2. Click where you want to insert the attachment
3. Select the saved file from your PC/network
4. Select appearance of icon (paperclip, graph, attachment or tag) and close

Pencil tool — For circling parts of figures or making freeform marks

Creates freeform shapes with a pencil tool. Particularly with graphics within the proof it may be useful to use the Drawing Markups toolbar. These tools allow you to draw circles, lines and comment on these marks.



How to use it:

1. Select Tools > Drawing Markups > Pencil Tool
2. Draw with the cursor
3. Multiple pieces of pencil annotation can be grouped together
4. Once finished, move the cursor over the shape until an arrowhead appears and right click
5. Select Open Pop-Up Note and type in a details of required change
6. Click the X in the top right hand corner of the note box to close.

Help

For further information on how to annotate proofs click on the Help button to activate a list of instructions: