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**Intrinsic and extrinsic approach and avoidance and/or effort reduction motivations of Wikibookians towards content contribution to open educational texts**

*Amal Hanna and Jacques Metzger (University of South Australia)*

Theories of human motivation have a central position in psychology. Research in the psychology of motivation found that individuals do what they want to do because they enjoy what they do (intrinsic motivation) and/or they would gain some benefits (ego-enhancement and/or rewards) or avoid difficulties (guilt-reduction and/or punishment). Motivation through external contingencies is typically labelled as extrinsic. Self-determination theory (SDT) discusses intrinsic and extrinsic motivation, as well as situations of amotivation in which individuals are unwilling or refuse to perform certain actions. Focusing on situations in which some individuals have volunteered (and are volunteering) to contribute to open educational resources such as Wikibooks raises the following questions: Why do individuals approach Wikibooks to contribute? Do those contributors enjoy contribution and/or do they gain any other benefits? Why do other individuals not contribute to Wikibooks? Do contributors to Wikibooks face situations in which they reduce effort? An online self-report questionnaire was designed to explore goals and motivations of Wikibookians to an open content website, with respect to them approaching and/or avoiding (or reducing) such effort. To explain the results, it is suggested that SDT is not only a replica of Goal Valence (approach-avoidance) Theory (GVT) of (cognitive) motivation, but also that these two theories, to a large extent, can be integrated. This integration adds a new perspective to both SDT and GVT. Implications of the results are discussed with respect to sustainability of open educational resources.

# Intrinsic & extrinsic approach and avoidance (effort reduction): Motivations of Wikibookians towards content contribution to open educational texts

**Amal Hanna**

School of Communication  
Amal.Hanna@UniSA.edu.au

**Jacques C. Metzger**

Centre of Applied Psychological Research  
Jacques.Metzer@UniSA.edu.au  
(Presenter)

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- History of 300 years of “Open Science” (OS): Royal Society, Academie Francaise, etc., etc.
- C20<sup>th</sup> Large scale destruction of OS by national, government and military requirements
- Commercial in confidence; patents (economic advantages)
- Patents on genes (e.g. Monsanto “owes” 90% of genetically modified seeds); patents on life itself?
- Lack of trust in the authority of science? (witness huge popularity of nonevidenced based health interventions)
- IT revolution: huge explosion of Open ‘info’
- Common heritage of humanity?
- Academics wary of Wikipedia, similar to early wariness by scientists publishing in certain journals in 19<sup>th</sup> and 20<sup>th</sup> C (Cribb, 2010)



**WIKIPEDIA**  
The Free Encyclopedia



**WIKIBOOKS**



**WIKIVERSITY**



**WIKINEWS**



**WIKIMEDIA**

a multilingual tree  
encyclopedia

**Wiktionary**  
[ˈwɪkʃənəri] *n.*,  
a wiki-based Open  
Content dictionary

*Wikeo* [ˈwɪkəʊ]



**WIKISOURCE**



**WIKISPECIES**  
*free species directory*



## Wikibookians

- are those who use open wiki textbooks and contribute to the open content
- are not only students; general public can also write open content
- Reasons (Sajjapanroj et al. 2006) for their contributions include
  - ❖ Learning
  - ❖ Networking
  - ❖ Practise new technologies
  - ❖ Study requirements
  - ❖ Publish work
  - ❖ Sharing knowledge



Deci & Ryan (1985) found that individuals are:

1) Intrinsically motivated when they undertake activities purely for enjoyment

1) Extrinsically motivated when

- a. they identify values that have already become part of the self
- b. they accept a behaviour as personally important
- c. they react to enhance their ego or reduce feelings of guilt
- d. they subject to external regulation (rewards & punishments)

2) Amotivated due to lack of intention to act or have been unable to achieve a desired outcome



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Koestner and Losier (2004) argued that intrinsic motivation (enjoyment) suits short-term goals, whereas extrinsic motivation suits long-term goals: hence, a link between the nature of goal determination and motivation.

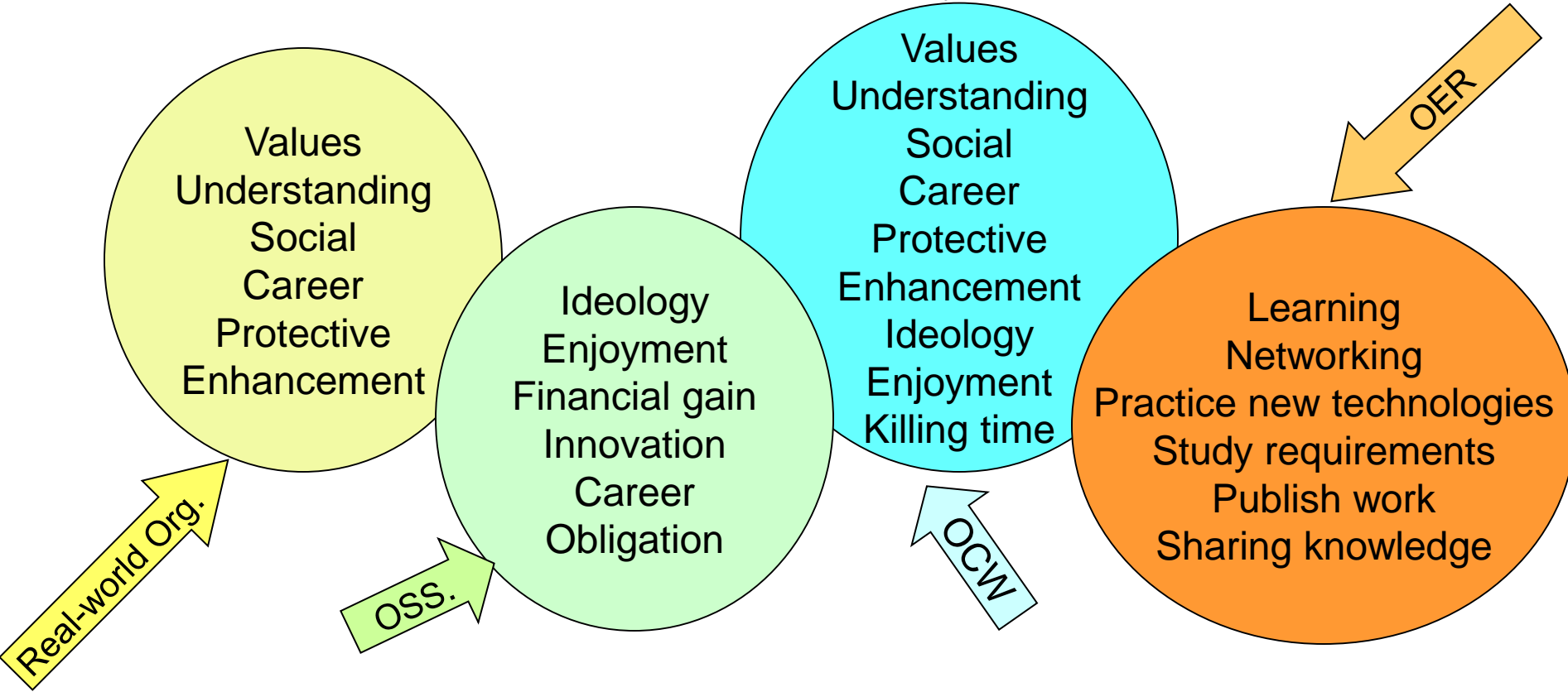
Unrealistic distinction between intrinsic and extrinsic motivation since both intrinsic and extrinsic motivation might co-exist ( Covington & Müller, 2001) in long and short term goals.

Legault, Green-Demers and Pelletier (2006) argued that amotivation goes beyond the one-dimensional model to include factors relating to ability beliefs, effort beliefs, characteristics of the task, and value placed on the task.

While approach goals are easier to assess since they elicit positive cognitions by leading people to focus on their desirable outcomes, avoidance goals are difficult to monitor and elicit negative cognitions by leading people to focus on undesirable outcomes (Elliot & Covington, 2001).

Carver (1996) argued that identified regulation, for practical reasons, is equivalent to intrinsic motivation in its sequences.

Online Survey aimed to examine goals that ***motivate*** individuals to volunteer to real-world organisations, open source software (OSS) projects, open content webpages (OCW), and open educational resources (OER) vary and included:







How about ***amotivation***?

**We know that people are unwilling to act when they have**

beliefs of Inability (lack of confidence)

Large effort beliefs

Difficulty with task

Do not value task highly

**Usually people do not volunteer because of**

Lack of time

Other interests

Social and business responsibilities

Low value of volunteering

Lack of high quality materials that support activities

Lack of cooperation from others



## Research questions

- Can both intrinsic and extrinsic motivations to contribute to OER co-exist?
- Can approach and avoidance motivations co-exist?
- Can amotivation be multi-dimensional? If yes, what are factors contributing to amotivation?



A theoretical combination of elements of  
Self-Determination Theory (SDT) and Goal-Valence Theory (GVT)

Motivation					
Amotivation		Extrinsic Motivation		Intrinsic Motivation	
Negative beliefs	Inability	Reward and Punishment	Ego-enhancement and Guilt reduction	Endorsed values	Enjoyment



A restricted-access web-based survey was used to collect selfreport info from Wikibookians.

Invitation emails, including a username and password, were sent to subscribers of *Wikibooks'* email list.

Statements were designed to measure approach and avoidance motivations with 5 point *Likert*-type scale items with response categories from strongly agree (+2) to strongly disagree (-2).

Usable responses to the survey were N= 262

Both Factor analysis and Varimax rotation for the total scale items produced reasons for contribution (approach) and reasons for non-contribution (avoidance).

## Rotated components matrix of reasons for contribution

Items	Component	
	1 'Extrinsic'	2 'Intrinsic'
I want to have fun	.237	<b>.525</b>
My friends do so	<b>.666</b>	.062
Poor people can use these free books	.103	<b>.778</b>
My teacher asked me to do so	<b>.689</b>	-.102
I believe that information should be free	-.106	<b>.708</b>
My religious teaching asks me to help others	<b>.461</b>	.426
Others do not have the expert knowledge that I have	.341	.214
I cannot find other places to publish my work	<b>.679</b>	.129
I'm lonely and have free time	<b>.634</b>	.025
I want to express my personal opinions	<b>.549</b>	.349
There is a lack of information resources in my language.	.371	.379
I contribute because I want to learn	.057	<b>.629</b>

Note: Loadings than less than 0.45 were excluded from the further analysis



### Rotated components matrix for intrinsic reasons for contribution

items	Component	
	1 'Integrated values'	2 'Enjoyment'
I want to have fun	.110	<b>.968</b>
Poor people can use these free books	<b>.686</b>	.405
I believe that information should be free	<b>.811</b>	.015
I contribute because I want to learn	<b>.730</b>	.110

Note: Loadings than less than 0.45 were excluded from the further analysis

### Rotated components matrix for extrinsic reasons for contribution

	Component	
	1 ‘Ego- enhancement/ guilt reduction’	2 ‘External regulation’
My friends do so	.194	<b>.817</b>
My teacher asked me to do so	.149	<b>.856</b>
My religious teaching asks me to help others	<b>.700</b>	.076
I cannot find other places to publish my work	<b>.623</b>	.282
I’m lonely and have free time	<b>.525</b>	.334
I want to express my personal opinions	<b>.801</b>	.085

Note: Loadings than less than 0.45 were excluded from the further analysis

## Rotated Components matrix for Reasons of non-contribution scale

	Component					
	1	2	3	4	5	6
Our society does not value voluntary work	<b>.851</b>	.056	.127	.019	-.041	.184
Our educational system (institution) does not (or cannot) adopt this technology as a part of learning process	<b>.694</b>	.200	.060	-.055	.274	.146
I do not feel confident	.165	<b>.743</b>	.219	.065	-.016	.029
I prefer reading to writing	.016	<b>.741</b>	-.075	.157	.009	.195
I don't have a knowledge base in any suitable topic	.044	<b>.669</b>	.160	-.009	.391	-.089
There is no clear structure for textbooks	.393	.440	.125	.120	.228	.383
This is not my job to write textbooks	.077	.159	<b>.783</b>	.233	.107	.162
As this is voluntary work, orders to contribute are not acceptable to me	.100	.119	<b>.762</b>	.090	.107	.350
No financial reward	.442	.041	<b>.526</b>	.138	.341	-.001
I prefer socializing with family and friends rather than setting on the computer to contribute	-.071	-.008	.526	<b>.834</b>	.021	.006
I have other hobbies and interests that take up my time rather than contributing to wiki	.019	.374	.251	<b>.735</b>	-.019	-.018
Contribution is useless unless others know of this website	.421	-.025	.130	<b>.588</b>	.373	.200
I can't use wiki	.073	.165	-.063	.016	<b>.837</b>	.109
This is un-helpful website	.440	.019	.113	.147	<b>.551</b>	.037
I prefer to write in my own language	.140	.082	.246	-.013	-.083	<b>.797</b>
Others do not have an internet access or do not know of this website	.244	.082	.276	.071	.383	<b>.662</b>

Note1: Component 1 is 'negative views toward contextual systems'. Component 2 is 'lack of confidence'. Component 3 is 'negative views toward volunteering'. Component 4 is 'distracting interests'. Component 5 is 'negative views toward wikis'. Component 6 is 'irrelevant excuses'.

Note2: Loadings than less than 0.45 were excluded from the further analysis





## Conclusions

- 1) Approach (contribution) and avoidance (noncontrib) may co-exist**
- 2) Intrinsic and extrinsic motivation may co-exist**
- 3) While intrinsic motivation reflects approach motives only, extrinsic motivation reflects the conflict between the desired and undesired issues**
- 4) Although results regarding amotivation failed to demonstrate the two amotivational dimensions (inability and negative beliefs), it may be useful to go beyond the one-dimensional model.**



## References

Carver, C. S. (1996). Some ways in which goals differ and some implications of those differences. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action: linking cognition and motivation to behaviour* (pp. 654-671). New York: Guilford Press.

Clary, E. G., Snyder, M., Ridge, R. D., Copeland, J., Stukas, A. A., Haugen, J., & Miene, P. (1998). Understanding and assessing the motivations of volunteers: A functional approach. *Journal of Personality and Social Psychology*, 74(6), 1516-1530.

Covington, M., & Müller, K. (2001). Intrinsic versus extrinsic motivation: An approach/avoidance reformulation. *Educational Psychology Review*, 13(2), 157-176.

Cribb, J., & Sari, T. (2010) *Open Science-sharing knowledge in the global century*. CSIRO publishing.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.

Elliot, A. J., & Covington, M. (2001). Approach and avoidance motivation, *Educational Psychology Review*, 13(2), 73-92.

Hars, A., & Ou, S. (2001). Working for free? Motivations of participating in open source projects. Paper presented at the Thirty-Fourth Hawaii International Conference on System Sciences, Hawaii.

Hertel, G., Niedner, S., & Herrmann, S. (2003). Motivation of software developers in Open Source projects: an Internet-based survey of contributors to the Linux kernel. *Research Policy*, 32(7), 1159-1177.



Koestner, R., & Losier, G. F. (2004). Distinguishing the ways of being internally motivated: A closer look at introjection, identification, and intrinsic motivation. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 101-121). Rochester, NY: University of Rochester Press.

Lakhani, K., & Wolf, R. (2005). Why hackers do what they do: Understanding motivation and efforts in free/open source projects. In J. Feller, B. Fitzgerald, S. A. Hissam & K. Lakhani (Eds.), *Perspectives on free and open source software* (pp. 3-22). USA: Massachusetts Institute of Technology (MIT) Press.

Legault, L., Green-Demers, I., & Pelletier, L. (2006). Why do high school students lack motivation in the classroom? Toward an understanding of academic amotivation and the role of social support. *Journal of Educational Psychology*, 98(3), 567-582.

Nov, O. (2007). What motivates Wikipedians? *Communications of the ACM*, 50(11), 60-64.

Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, 25(1), 54-67.

Sajjapanroj, S., Bonk, C., Lee, M., & Lin, G. (2006). The challenges and successes of Wikibookian experts and want-to-bees. Paper presented at the World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education, Honolulu, Hawaii, USA.

White, D. J. & Arnold, M. E. 2003, Why they come, why they go, and why they stay: Factors affecting volunteerism in 4-H Programs, *Journal of Extension*, vol. 41, no. 4, viewed, <<http://www.joe.org/joe/2003august/rb5.php>>.

Yang, H.-L., & Lai, C.-Y. (2010). Motivations of Wikipedia content contributors. *Computers in Human Behaviour*, 26(6), 1377-1383.