

睡眠时型与抑郁的关系及其机制*

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摘 要 抑郁症不仅严重影响个体的身心健康, 也加大了医疗保健的负担, 已成为全球关注的公共卫生问题。众多研究表明昼夜节律紊乱与抑郁症显著相关, 使睡眠时型成为探讨抑郁发生和发展的一个新视角。睡眠时型包括清晨型、中间型和夜晚型。夜晚型是抑郁的风险因素, 清晨型则是其保护性因素。情绪调节行为机制和杏仁核、扣带回皮质等神经机制的探讨, 可以帮助我们更好理解睡眠时型对抑郁的影响。未来研究还需要探索睡眠时型的多维结构, 增加前瞻性队列研究设计, 丰富心理和生理机制, 加强干预性的实证研究。

关键词 抑郁; 睡眠时型; 情绪调节

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1 引言

抑郁症状指忧郁情绪、精力下降、感到绝望等一系列症状的总称(徐志坚 等, 2016), 作为一种常见的消极情绪状态, 抑郁症状如不及时干预, 可能发展为抑郁症(Compas et al., 1993; 刘福荣等, 2020)。据统计, 从 1990 年至 2017 年, 全球受抑郁症困扰的人数从 1.72 亿增加到 2.58 亿, 增长了 49.86% (Liu et al., 2020)。全球疾病负担(Global Burden of Disease, GBD)调查显示, 以伤残所致的健康寿命损失年衡量, 抑郁症的疾病负担位于十大原因之首, 权重约为 10.3% (Smith, 2014), 而每年因抑郁症产生的社会成本高达 116 亿美元(Mrazek et al., 2014)。由于高增长率及严重后果, 抑郁症成为全球关注的公共卫生问题, 其成因和预防也为学术界研究的焦点(Au & Reece, 2017; Wright & Beck, 1983; 叶宝娟 等, 2018)。

已有研究表明, 昼夜节律紊乱与抑郁症显著相关(Salgado-Delgado et al., 2011)。昼夜节律是一种内源性的、以近似 24 小时为周期波动的生命过程(王钧左 等, 2019)。受生物钟影响, 个体间昼夜

节律相对一致又各不相同。位于下丘脑的视交叉上核, 接受视网膜神经节细胞的投射, 对外界的明暗变化作出反应, 在昼夜节律的调控中起主导作用, 被称为中枢生物钟或者中央起搏器(Golombek & Rosenstein, 2010; Wirz-Justice & Fournier, 2010)。褪黑激素或外源性强光可加快或减缓生物钟的进程(Lockley et al., 2007), 夜晚褪黑激素的分泌会加快生物钟促使个体进入睡眠状态, 造成相位提前, 而夜间大量的外部光源则会抑制褪黑激素的分泌, 促使个体保持觉醒状态, 造成相位延迟(Desanctis, 2017; Lewy, 1987)。故睡眠时型的本质为内源性的生理特征, 可通过体温、皮质醇等生理指标的生物学周期加以区分(Horne & Ostberg, 1976; Kudielka et al., 2006; Natale & Cicogna, 2002)。基于个体会依据自身的昼夜节律选择合适的生活节奏(Furnham, 1990)这一假设, 睡眠时型被概念化为对日常活动和睡眠时间的偏好(Au & Reece, 2017)。清晨型-夜晚型问卷(Morningness-Eveningness Questionnaire, MEQ)、复合清晨型量表(Composite Scale of Morningness, CSM)和慕尼黑睡眠类型问卷(Munich Chronotype Questionnaire, MCTQ)是睡眠时型的常用测量工具, 其中 MEQ、CSM 得分越高表示越倾向于清晨型, 反之则倾向于夜晚型(Roenneberg, 2015)。清晨型偏爱早睡早起, 在早晨进行身体与智力活动最有效率; 夜晚型偏爱晚

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睡晚起,在下午或晚上感受和表现更好;中间型处于这两种情况之间(Haraden et al., 2017; Nowack & van der Meer, 2013; 宋晶晶, 郑涌, 2002)。也有学者采用绝对夜晚型、适度夜晚型、中间型、适度清晨型和绝对清晨型的分类法(Kitamura et al., 2010; 张斌 等, 2006)。

作为一种较为稳定的特质(Drennan et al., 1991; Druiven et al., 2020),睡眠时型会随着年龄而变化,儿童和年长者更有可能是清晨型,而青少年、青年、中年更偏向于夜晚型(Haraden et al., 2017; Haraden et al., 2019)。这既与内部生物钟相位的变化有关(Monk & Buysse, 2014),也与社会需求有关(Paine et al., 2006)。已有学者从年龄角度对睡眠时型与抑郁的关系进行了梳理(Keller et al., 2016)。Adan 等(2012)认为外部社会通过要求个体何时起床影响睡眠时型,调查研究也发现工作时间表是睡眠时型的重要预测因素(Paine et al., 2006)。由于临床症状可能导致个体昼夜节律的改变和工作、社会功能的受损(Abe et al., 2011; Gaspar-Barba et al., 2009),故探讨睡眠时型与抑郁的关系离不开样本特征的区分。近年越来越多的学者开始关注睡眠时型对抑郁影响的内在机制,但未见对此进行系统总结。鉴于此,本文首先从非临床与临床样本分析睡眠时型与抑郁的关系,接着阐述其可能的行为和神经机制,并对未来研究进行了展望。

2 睡眠时型与抑郁的关系

2.1 非临床样本

非临床样本指在调查前未明确是否具有某些达到临床诊断标准疾病的样本。众多对非临床样本的调查显示,夜晚型与抑郁症状呈显著正相关,且对抑郁症状和抑郁症具有正向预测作用,而清晨型则相反(Alvaro et al., 2014; Chiu et al., 2017; Lester, 2015; Randler et al., 2012; Togo et al., 2017)。例如,de Souza 和 Hidalgo (2014)采用慕尼黑睡眠时型问卷和贝克抑郁量表(Beck Depression Inventory, BDI)对 351 名学生的调查发现,工作日和休息日的睡眠中点越晚(倾向于夜晚型),其抑郁症状愈严重,且较晚的睡眠中点对轻度抑郁症状(BDI ≥ 10)具有正向预测作用。Alvaro 等(2014)使用儿童清晨型-夜晚型量表和儿童抑郁焦虑量表修订版对高中生的研究也发现,睡眠时

型得分和重度抑郁的得分呈显著负相关,且对重度抑郁具有显著的负向预测作用,表明个体越倾向于夜晚型,其抑郁水平越高。Chiu 等(2017)采用流调中心抑郁量表(Center for Epidemiologic Studies Depression Scale, CES-D)对 2139 名一至七年级学生的研究也发现,控制人口学变量和睡眠质量后,夜晚型对抑郁症(CES-D > 21)仍具有显著的正向预测作用。Merikanto 等(2013)对 6071 名芬兰成年人调查的逻辑回归分析结果显示,夜晚型被诊断为抑郁症、使用抗抑郁药物以及出现抑郁症状的可能性显著高于中间型和清晨型,在控制了人口学变量、生活方式、睡眠是否充足等变量后,二者的关系依然显著(Merikanto et al., 2015)。van den Berg 等人(2018)对 115 名大学生的追踪研究发现,基线时期个体越倾向于夜晚型,一年后抑郁症状也更为严重,与基线水平的抑郁症状无关。另一项针对 30 名实习医学生的纵向研究也发现,实习开始时的清晨型对实习结束时的抑郁症状具有显著的负向预测作用,表明清晨型可能是抑郁症状的保护性因子(Tafoya et al., 2019)。

也有研究显示,只有绝对夜晚型与抑郁显著相关。例如,Kitamura 等(2010)对 1170 名高校和医疗机构的工作人员及其家属调查的逻辑回归分析结果显示,绝对夜晚型抑郁状态(CES-D ≥ 16)的发生率比中间型高 92.6%,绝对清晨型的发生率则比中间型低 65.8%,而适度夜晚型与中间型的差异不显著,与主观睡眠质量、白天嗜睡等睡眠变量无关。Norbury (2019)对 5360 名英国成年人调查的逻辑回归分析结果显示,在控制神经质、睡眠时间、社会经济地位、生活方式以及人口学变量后,绝对夜晚型发生中度和重度抑郁症的可能性比绝对清晨型高 51.0%。另一项针对 32470 名中年女性的前瞻性队列研究,排除基线时具有抑郁症状及诊断为抑郁症的个体,控制更年期状况、婚姻状况、生活方式、家庭收入、退休状态、吸烟状况、睡眠时长等变量,采用敏感性分析结果发现 4 年后绝对夜晚型的抑郁风险比中间型高 13%,而绝对清晨型比中间型低 6%(Vetter et al., 2018)。需要注意的是,以上研究判定绝对夜晚型的标准不一,Kitamura 等(2010)依据问卷总分的百分位数来划分,Vetter 等(2018)和 Norbury (2019)是根据单个题项自我报告的结果,

且 Vetter 等将适度清晨型和适度夜晚型并入中间型。由于研究者对睡眠时型划分标准不一, 绝对夜晚型与抑郁的关系如何未来还需进一步论证。

但并不是所有的研究都表明夜晚型与抑郁相关。Furusawa 等(2015)采用抑郁自评量表(Self-rating Depression Scale, SDS)对日本轮班工人调查的逻辑回归分析结果显示, 中间型发生抑郁状态($\text{SDS} \geq 45$)的风险是清晨型的 1.67 倍, 而夜晚型的抑郁状态的发生率差异不显著($\text{OR} = 3, p = 0.074$), 这可能是夜晚型样本的数量太少($n = 20$, 占比 2.3%)所致。Mokros 等(2017)对医学生的研究发现, 清晨型的抑郁症状更为严重, 医学生面临较大的学业和实习压力, 在医院实习可能需要值夜班(Tafoya et al., 2019), 故夜晚型对医学生具有一定的适应意义。该结论与 Tafoya 等(2019)对医学生的研究结果相反, 可能与测量工具的不同有关。Tafoya 等(2019)采用单维的清晨综合量表(CSM), 而 Mokros 等(2017)使用的睡眠时型问卷(Chronotype Questionnaire, CQ), 包括清晨-夜晚偏好(Morningness-Eveningness, ME)以及节奏振幅(Distinctness of rhythm, DI)两个维度, 其中 ME 分数越高表示越倾向于夜晚型, 节奏振幅指个体在 24 小时内调节能量水平的灵活性, 节奏振幅分数越低表明灵活性越高。结果显示节奏振幅与抑郁症状呈正相关($r = 0.33$), 而清晨-夜晚偏好与抑郁症状呈负相关($r = -0.17$), 这可能意味着相比清晨-夜晚偏好, 节奏振幅与抑郁症状的关系更为密切。通过对 MEQ、CSM 进行二维因子分析, 结果也发现清晨警觉性对抑郁症状的预测作用更强(Jankowski, 2016; Kontinen et al., 2014)。可见, 除了研究对象的差异, 测量工具及睡眠时型因子结构的不同划分, 也有可能对睡眠时型与抑郁的关系产生影响。

2.2 临床样本

临床样本指在调查前已明确具有某些达到临床诊断标准疾病的样本。当前对临床样本的研究主要包括两个方面, 一为调查研究, 即采用横向和纵向的研究设计调查不同睡眠时型和抑郁的关系; 二为干预研究, 由于抑郁与其他疾病具有较高的共病率, 临床多采用认知行为疗法对抑郁进行干预。

众多对临床样本的研究结果表明, 夜晚型对抑郁具有显著的正向预测作用(Abe et al., 2011;

Müller et al., 2016; Selvi et al., 2010), 且夜晚型具有更严重的抑郁发作(Bahk et al., 2014; Chan et al., 2014; Gaspar-Barba et al., 2009; Selvi et al., 2010)。例如, Abe 等人(2011)对睡眠时相延迟综合征(Delayed Sleep Phase Syndrome, DSPS)的横向研究结果显示, 适度夜晚型和绝对夜晚型发生中度和重度的抑郁症状($\text{SDS} \geq 48$)的可能性显著高于中间型。使用贝克抑郁量表对重度抑郁症患者的调查发现, 夜晚型患者的得分显著高于清晨型(Selvi et al., 2010)。Müller 等(2016)对不同睡眠时型的抑郁障碍患者在贝克抑郁量表上的得分进行多元协方差分析, 结果显示在认知症状维度上夜晚型显著高于清晨型, 而在情感和躯体症状维度二者的差异不显著, 表明抑郁性认知可能是夜晚型具有更严重的抑郁症的原因之一。不仅如此, 相比清晨型, 夜晚型重度抑郁症患者具有更多的自杀意念, 工作、社会功能受损也更为严重(Bahk et al., 2014; Chan et al., 2014; Gaspar-Barba et al., 2009; Selvi et al., 2010)。

对临床样本的纵向研究显示, 夜晚型抑郁的预后效果较差。例如, 针对 419 名失眠患者的认知行为疗法的干预结果显示, 个体越倾向于夜晚型, 干预后其抑郁得分降低的越少, 与干预前的抑郁水平无关(Bei et al., 2015)。Chan 等(2014)对 253 名重度抑郁症患者的纵向研究发现, 6 年后夜晚型重度抑郁症未缓解的风险是非夜晚型的 3 倍。然而, Druiven 等(2019)对抑郁障碍患者(重度抑郁症和心境障碍)的追踪研究发现, 睡眠时型不能预测抑郁障碍的缓解或维持。这可能是由于该研究中评估抑郁障碍的标准为持续一个月以上, 意味着只能诊断评估前一个月出现的症状, 而在这一个月内的患者的抑郁可能发生缓解或复发, 因而难以发现睡眠时型对抑郁障碍进程的预测作用。

3 睡眠时型与抑郁关系的内在作用机制

对于睡眠时型与抑郁关系的内在作用机制, 早期主要集中于基因、人格、社交时差、睡眠质量等(宋晶晶, 郑涌, 2014), 其遵循的逻辑是不同睡眠时型在以上诸因素存在差异(Levandovski et al., 2011; Merikanto, et al. 2012; Randler et al., 2017; Toomey et al., 2015), 而睡眠、基因、人格等又对抑郁症状有影响(Sheaves et al., 2016; Toomey et al., 2015; 徐华春 等, 2009)。近年还发现睡眠

质量在睡眠时型与抑郁的关系中起中介作用 (Chiu et al., 2017; Horne et al., 2019; Mokros et al., 2017; van den Berg et al., 2018)。但由于对基因、人格、社交时差等的干预难度较大, 随着研究不断深入, 越来越多学者开始关注那些更具可塑性的因素, 如情绪调节、时间洞察力等 (Antypa et al., 2017; Milfont & Schwarzenenthal, 2014; Nowack & van der Meer, 2013; van den Berg et al., 2018)。本文将从情绪调节、时间洞察力等行为机制以及杏仁核、扣带回皮质等神经机制两个方面, 探讨睡眠时型与抑郁关系的内在机制, 以期降低夜晚型的抑郁风险提供理论参考。

3.1 行为机制

情绪调节是个体自动或有意识地对情绪的发生、强度、持续时间以及表达施加影响的过程 (Aldao et al., 2010; Gross, 1998), 常见方法有认知重评、问题解决、抑制、回避和反刍等。研究表明抑制、回避、反刍等非适应性的情绪调节策略是抑郁症的风险性因素, 而认知重评、问题解决等适应性的情绪调节策略是保护性因素 (Aldao et al., 2010)。有学者认为抑郁作为一种情绪障碍, 是情绪调节困难的结果 (Gross & Munoz, 1995; Mennin et al., 2007)。在睡眠时型和情绪调节策略的关系中, 夜晚型和表达抑制、反刍等情绪调节策略使用呈正相关, 和认知重评负相关 (Antypa et al., 2017; van den Berg et al., 2018; Watts & Norbury, 2017), 且反刍、认知重评在夜晚型和抑郁症/抑郁症状的关系中起部分中介作用 (Antypa et al., 2017; van den Berg et al., 2018)。上述研究表明, 当经历消极情绪时, 清晨型更有可能选择合理的方式表达内心体验, 并能从积极的角度去看待消极情境 (van den Berg et al., 2018; Watts & Norbury, 2017), 有效减少消极情绪的主观体验和生理反应 (Gross, 1998)。相反, 夜晚型倾向于抑制情绪体验的表达, 或沉浸在消极情绪的原因和后果中, 阻碍了问题的解决 (Hong, 2007), 并导致负性情绪的维持以及交感神经系统激活的加强 (Gross, 1998), 增加了抑郁的风险。

除了情绪调节策略的使用存在差异外, 夜晚型具有更消极的自我形象且在情绪加工过程中存在消极认知偏差。这一方面与夜晚型的实际情况有关, 如夜晚型更易肥胖、具有较差的生理状况和学业成绩 (Enright & Refinetti, 2017; Gulec et al.,

2013; Malone et al., 2016), Müller 等 (2016) 也发现夜晚型具有更高的自我厌恶分数。另一方面, 可能受到夜晚型存在的消极认知偏差的影响, 在情绪识别任务中, 夜晚型识别快乐面孔的准确率与清晨型无显著差异, 而对悲伤面孔和消极人格特征词的准确率和反应速度高于清晨型 (Berdynaj et al., 2016; Horne et al., 2017)。根据自我差异理论, 现实自我与理想自我的差距, 会使个体产生悲伤、失望和不满的情绪 (Higgins, 1987)。夜晚型消极的自我形象和认知偏差使其更易产生负面情绪, 而非适应性的情绪调节策略的使用, 促进了负面情绪的维持甚至加重, 从而增加了夜晚型抑郁的风险。

时间洞察力指个体对过去、现在和未来的观点、态度和意识, 会对许多日常判断、决策和行动产生影响 (黄希庭, 郑涌, 2000; Zimbardo & Boyd, 1999)。情绪调节作为个体运用策略对情绪施加影响的过程, 与时间洞察力息息相关。研究表明, 未来时间洞察力和问题解决、认知重评等情绪调节策略呈正相关 (Taylor & Wilson, 2016; Yeung et al., 2012), 过去积极、现在享乐时间洞察力和认知重评呈正相关, 而过去消极时间洞察力和表达抑制呈正相关 (Wang et al., 2015)。根据社会情绪选择理论 (Socioemotional Selectivity Theory, SST), 当知觉未来时间充足时, 个体会选择获得知识目标, 反之则追求情绪调节目标 (Carstensen et al., 1999)。据此, 研究者认为有限的未来时间知觉会使个体追求积极情绪, 避免消极情绪, 促进情绪调节能力的提高 (胡雪, 刘启珍, 龚先旻, 尹述飞, 2018)。也有学者发现有限的未来时间知觉会降低情绪调节能力 (Sakakibara & Ishii, 2020)。虽然并未得出一致的结论, 但表明时间洞察力会影响情绪调节。

近年发现, 作为生理时间的睡眠时型与作为心理时间的时间洞察力密切相关。多项研究均表明, 清晨型具有更高的未来时间洞察力, 而夜晚型具有更高的现在宿命、过去消极时间洞察力 (Milfont & Schwarzenenthal, 2014; Nowack & van der Meer, 2013; Stolarski et al., 2013)。Milfont 和 Schwarzenenthal (2014) 采用实证方法进一步验证了睡眠时型→自我控制→未来时间洞察力的关系路径。综合不同睡眠时型在时间洞察力上的差异 (Milfont & Schwarzenenthal, 2014; Nowack & van

der Meer, 2013; Stolarski et al., 2013)、时间洞察力对情绪调节的影响(Taylor & Wilson, 2016; Yeung et al., 2012), 以及情绪调节在睡眠时型和抑郁之间的部分中介作用(Antypa et al., 2017; van den Berg et al., 2018), 我们推测睡眠时型可能通过时间洞察力对情绪调节产生影响, 进而导致了抑郁风险的差异。具体地说, 夜晚型更容易出现抑郁, 可能是由于夜晚型具有更高的现在-宿命和过去消极时间洞察力, 具有较低的未来时间洞察力(Milfont & Schwarzenhal, 2014; Nowack & van der Meer, 2013; Stolarski et al., 2013), 更常使用反刍、表达抑制等非适应性的情绪调节策略, 导致了负性情绪的维持甚至加重, 增加了抑郁症状出现的可能性。相反, 清晨型更注重未来(Milfont & Schwarzenhal, 2014; Nowack & van der Meer, 2013; Stolarski et al., 2013), 更多地使用认知重评和问题解决等适应性的情绪调节策略(Antypa et al., 2017; van den Berg et al., 2018), 进而降低了抑郁风险, 即睡眠时型→时间洞察力→情绪调节→抑郁的链式中介路径。以上中介路径仅是一种理论推测, 目前尚无直接的证据支持该观点。考虑到时间洞察力和情绪调节策略的多样性, 不同时间洞察力维度和情绪调节策略在睡眠时型和抑郁之间的作用如何, 未来还需进一步研究。

3.2 神经机制

在行为学和元分析研究的基础上, 研究者借助核磁共振成像技术, 探讨睡眠时型对抑郁影响的脑机制。Horne 和 Norbury (2018a)对健康被试的研究发现, 不同睡眠时型在情绪加工相关脑区的激活水平和功能连接程度存在差异, 具体表现为面对可怕表情, 夜晚型杏仁核激活程度高于清晨型, 杏仁核和扣带回皮质的功能连接却低于清晨型。杏仁核作为个体面临压力情境时的主要反应器官, 其激活程度可作为情绪强度的一个指标。同时, 作为大脑边缘系统的重要器官, 杏仁核的活动会受到大脑皮质区域(如额叶上回、扣带回和运动前区)的调节(Frank et al., 2014)。当杏仁核过度激活时会产生自下而上的信号, 抑制负责处理情绪信息的大脑皮质区域的活动(Disner et al., 2011)。Horne 和 Norbury (2018a)的研究中, 夜晚型杏仁核激活程度较高, 且杏仁核与扣带回的功能连接程度较低, 意味着在面临消极刺激时夜晚型可能会产生更为强烈的情绪反应, 使得扣带回

皮质对杏仁核的调节功能受到抑制, 从而影响了情绪调节。

除了情绪加工相关脑区的激活程度, 不同睡眠时型的默认模式网络各节点的功能连接也存在差异。默认模式网络(Default Mode Network, DMN)是个体专注于内部, 如自我内省、情绪加工、情景记忆提取时, 优先被激活的网络, 包含扣带回、楔前叶、内侧前额叶等脑区(Raichle et al., 2001)。Horne 和 Norbury (2018b)采用静息态功能核磁共振成像(resting-state functional Magnetic Resonance Imaging, rs-fMRI)对健康被试的研究发现, 扣带回和楔前叶的功能连接强度与简版 MEQ 得分呈正相关, 夜晚型扣带回和楔前叶功能连接强度较弱。在抑郁症患者(Zhu et al., 2012)、高神经质(Servaas et al., 2013)、有家族抑郁史(Bellgowan et al., 2015)等抑郁高风险个体中, 均发现默认模式网络中扣带回和楔前叶功能连接的异常, 因此杏仁核、扣带回皮质和楔前叶可能是睡眠时型与抑郁关联的重要神经基础。

4 总结与展望

回顾对临床样本和非临床样本的研究, 可以发现夜晚型具有更高的抑郁水平和抑郁风险。同时, 夜晚型还是临床样本抑郁缓解的不利因素, 干预后夜晚型临床样本抑郁症状的缓解程度小于清晨型。

在行为层面上, 不同睡眠时型的时间洞察力存在差异, 导致情绪调节策略的运用不同, 可能是睡眠时型与抑郁关联的内在机制。在神经层面上, 清晨型和夜晚型在涉及情绪加工的脑区, 如杏仁核、扣带回、楔前叶等的激活水平和功能连接程度的差异, 可能是睡眠时型影响抑郁的神经机制。

以上研究丰富了睡眠时型与抑郁关系的认识, 但迄今为止, 睡眠时型与抑郁关系的证据主要来自问卷调查, 研究方法的局限性限制了因果关系的解释力。基于此, 我们对未来的研究提出了以下几点思考:

第一, 加强对睡眠时型多维结构的探索。一直以来, 众多研究者主要通过自我报告的问卷总分或睡眠中点来衡量睡眠时型, 本质上是将睡眠时型视为单维结构。近年来, 有学者认为睡眠时型可能是由不同成分构成的多维结构, 如清晨警

觉性和清晨-夜晚偏好(Jankowski, 2016; Konttinen et al., 2014)或清晨-夜晚偏好和节奏振幅(Distinctness of rhythm)两个成分(Mokros et al., 2017),发现相比清晨-夜晚偏好,清晨警觉性及节奏振幅与抑郁之间的关系更强,且二者对抑郁症状表现出相反的预测作用,具体为清晨警觉性越高(Jankowski, 2016; Konttinen et al., 2014),抑郁水平越低,而节奏振幅越高,抑郁水平越高(Mokros et al., 2017)。这可能是由于测量工具的不同,清晨警觉性和节奏振幅本为睡眠时型的不同维度。在对抑郁不同成分的预测作用上,清晨警觉性对积极情绪和人际问题具有预测作用,而较低的清晨警觉性和清晨型可以预测躯体症状/抑郁情绪(Jankowski, 2016)。无论是从睡眠时型概念本身,还是为进一步了解睡眠时型与抑郁的关系,都有待加强对睡眠时型多维结构的探索。

第二,增加前瞻性队列研究。当前,以横向为主的研究限制了睡眠时型与抑郁的因果关系的推断。关于睡眠时型与抑郁的关系一直存在着争议,有研究发现抑郁症患者具有更高的夜晚型偏好(Antypa, Vogelzangs, Meesters, Schoevers, & Penninx, 2016),且纵向研究也发现较高的抑郁症状和抑郁症的诊断对未来的夜晚型偏好具有预测作用,有学者认为两者之间可能是一种双向因果关系(Haraden et al., 2017; 2019)。最近一项大规模的前瞻性队列研究,并没有发现睡眠时型和抑郁之间的反向因果关系(Vetter et al., 2018)。此外,与睡眠时型同时发生的、与抑郁相关的因素,如生活方式、人格特质、睡眠变量等也增加了因果关系的不确定性(Norbury, 2019; Randler et al., 2012; Randler et al., 2017)。未来还需设计更为严谨的前瞻性队列研究,明确可能会有重要影响的混淆变量,以进一步确定二者之间的因果关系。

第三,丰富睡眠时型与抑郁关联的内在机制研究。当前研究仍集中于睡眠时型与抑郁的关系,对于二者关系的内在机制研究较少。在心理机制上,已发现认知重评、表达抑制、反刍在睡眠时型与抑郁关系间起部分中介作用(Antypa et al., 2017; van den Berg et al., 2018),由于时间洞察力和情绪调节密切相关(Taylor & Wilson, 2016; Yeung et al., 2012),不同的时间洞察力和情绪调节策略在睡眠时型和抑郁关系中的作用如何,还需进一步研究。在生理机制方面,已发现不同睡

眠时型在涉及情绪加工的脑区,如杏仁核、扣带回、楔前叶等的激活水平和功能连接程度存在差异,而对时间洞察力的神经机制的研究还较为缺乏。总之,未来还需深入探讨睡眠时型与抑郁关联的心理机制和生理基础。

第四,加强干预性的实证研究。当前对睡眠时型与抑郁关系的研究以问卷调查为主,相关的干预性研究还较少。Bei等(2015)对失眠患者的认知行为干预,其内容以失眠相关的认知为主,未涉及消极偏见等与抑郁直接相关的认知,而研究发现夜晚型存在消极认知偏差(Berdynaj et al., 2016; Horne et al., 2017)。由于不同睡眠时型在时间洞察力和情绪调节上存在显著差异(Milfont & Schwarzenthal, 2014; Nowack & van der Meer, 2013; Stolarski et al., 2013),且情绪调节在睡眠时型和抑郁的关系中起部分中介作用(Antypa et al., 2017; 石绪亮, 范方, 曾彦莹, 朱亚, 2019)。已证实呼吸、静坐、身体扫描等正念练习,可减少过去消极时间洞察力,增加过去积极时间洞察力(Rönnlund et al., 2019),提高情绪调节能力(Lam & Seiden, 2020),未来可运用正念对不同睡眠时型的时间洞察力、情绪调节等干预,以降低抑郁风险。

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Relationship between chronotype and depression and its mechanism

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Abstract: As a worldwide public health challenge, depression negatively affects personal health and substantially increases the public burden of medical care. Prior research found a strong association between disrupted circadian rhythm and depression, suggesting the important role of chronotype in depression research. Individuals can be categorized into three general chronotypes: evening types (E-Types), morning types (M-Types), and neither type (N-Types). Most of studies show that evening types are independently associated with severe depressive symptoms, while morning types are a protective factor against depression. Behavioral mechanisms (such as emotion regulation) and neural mechanisms of amygdala and cingulate cortex may help us understand the effects of chronotype on depression. Future research should explore the sub-dimensions of chronotype, apply the prospective cohort design, and assess the proposed psychological and physiological mechanisms. In addition, the study has important implications to develop effective interventions to reduce depression.

Key words: depression; chronotype; emotion regulation